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Foreword

The 7th international scientific conference Changes in Social and Business Environment CISABE'2018 was organized as the part of the 2nd Forum on Innovative Technologies and Management for Sustainability that hosted two conferences: Changes in Social and Business Environment CISABE'2018 and 12th International Conference Intelligent Technologies in Logistics and Mechatronics Systems ITELMS'2018. The main idea of this joint event was to stimulate interdisciplinary approach on sustainability issues since the most advanced, innovative solutions are created by close cooperation between social and technological sciences.

Sustainable development focuses on balancing the fine line between competing needs - the need to always move forward technologically and economically, and the need to protect the environment we live. However, sustainability is not only about the environment, it is also about human health and about the health of a society. The lead conference topic encouraged researchers to offer deeper insights on the issue, since in the context of the 4.0 industrial revolution it is clearly understood that technological solutions without interwoven social ones would never work.

The conference participants were encouraged to discuss the issues about how social sciences can help to overcome the challenges identified in the new Horizon 2020 Global Research Program such as: demographic change, safe energy and transport, climate change and the conservation of natural resources, innovative and safe societies. The conference provided platform for new forms of cooperation, identification of emerging obstacles, and provision of solutions to overcome them.

Conference "Changes in Social and Business Environment CISABE'2018" topics included:

- Business and Management Trends in Changing Environment;
- Contemporary Marketing Dynamics Capabilities;
- Challenges and opportunities of Finance and Economics from Regional and Global Context;
- Sustainable Development: Social, Political, Economical/Business Setting;
- Knowledge Management and Organizational Learning;
- New approaches to Human Resource Management;
- Innovations and New Technologies in Business and Management;
- Identification and Interpretation of Social Phenomena;
- Changing Models of Economic Development.

This conference emerged as the result of collective efforts and here, we take the

opportunity to express our recognition of the efforts and hard work of all the people who have made CISABE'18 possible, who have done the hard work of preparation and organisation. Through these lines of welcome we would like to especially pay tribute to the Scientific Committee which has assured the quality of the pool of accepted papers, and to the members of the Organising Committee for their strong motivation and volunteer work, and eventually, to all the people who have directly or indirectly influenced the smooth progress towards the conference. Finally, we would like to express our gratitude to all the authors for contributing their papers to this volume.

Daiva ŽOSTAUTIENĖ
Dalia SUSNIENĖ
Violetta WEREDA

Contents

ITMS'2018

ktu 1922 panevėžys faculty of technologies and business

The 7th International Scientific Conference Changes in Social and Business Environment (CISABE'2018), 26–27 April 2018, Panevėžys, Lithuania

Usage of Various Modifications of Relative Strength Index in Foreign Exchange Market

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Abstract

Stimulated by fast developing of new technologies and new financial instruments, the Foreign Exchange market became open for all users 10–15 years ago. Till that moment, stocks, bonds and commodities weren't widespread financial products for regular investor. The article describes investing in currencies, which are Foreign Exchange market's product. Investing in currencies attracts investors with the biggest daily turnovers. Various investors, financiers and scientists created lot of economic ratios, mathematical formulas and investing strategies to help improve results from investments in financial instruments. Are these tools suitable in currencies market? The paper presents and discusses the data received using American analyst Welles Wilder's Relative Strength Index in spot trades of European euro versus United States dollar pair.

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Keywords: financial markets, FOREX, realative strenth index.

1. Introduction

Since first financial products have appeared in the market, people tried to make profit or save their capital by trading these products. Various approaches and theories are developed to evaluate risks, future value, future profit or loss. Despite lot of these approaches, financial instruments need new ones. There are many reasons such as new risks, new products and new technological possibilities for researching. Only last decade, our world got acquainted very closely with a new monetary instrument – "Quantitative Easing" (QE), a new impacting factor – "verbal

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intervention" and a new type of virtual assets – "cryptocurrency". All these financial novelties do an impact to financial markets including the currency market. S. Ugai [1] described QE as a way to reduce the value of national currency. The firsts, Shiratsuka, Takahashi & Ueda [2] used phrase "Quantitative Easing" for describing the monetary policy, which was used by Bank of Japan since 2001. This tool has helped to keep Japanese yen's value lower than other major currencies. Girardin, Lyons & Sager [3] made a research about "verbal intervention". They noticed that speeches of the officials significantly affect daily foreign exchange rate returns.

Fundamental and technical analyses are the main ways to make decisions for investing in financial market. In 1978 Welles Wilder [4] invented Relative Strength Index (RSI). It became very popular and widely used among technical analysts. Originally, this index was created for predictions in stock market. But the methodology of RSI calculation let us use it in other financial trading places such as Foreign Exchange market (FOREX). FOREX is the biggest market of financial products with 4–5 trillion US dollars daily turnover [5]. FOREX brokers have about 60 million internet and mobile visitors per month [6]. One of the attributes of this market is high volatility of prices. If you are investor, such volatility forces to watch FOREX instruments daily or hourly. In other words investor has to be prepared to react according to market changes. This article presents the results of trading the European euro versus US dollar (EUR/USD) currency pair with various interpretations of RSI. The biggest difference from W. Wilder's RSI is using this indicator on weekly charts. Meanwhile, RSI author recommends to do it on daily charts. Other difference is a change in number of periods than it was used in an original formula. W. Wilder recommends to calculate RSI with 14 periods. Meanwhile, the article presents data and discuses results obtained by using various periods in RSI calculation. The main aim of research is finding the best RSI modification for trading and investing in FOREX market. Alongside with the result, paper seeks and discuses fundamental reasons which influence changing price of EUR/USD currency. These reasons can distort the accuracy of RSI signals. Therefore, the understandable connection between them could help to create better investing strategy in future.

2. Using RSI in financial markets

Relative Strength Index belongs to moment indicators group. These indicators can determine the situation in financial market. In the situation when buyers dominate the market, prices always increase. Eventually the enthusiasm of buyers declines and they stop buying. This moment is called the "overbought market". Moreover, this moment signals about the possibility of price decrease. Vice versa, in the situation when sellers dominate the market, prices always decrease. Eventually the enthusiasm of sellers fades and they stop selling. Therefore, this moment is called the "oversold" market and it signals about the possibility of increase of price. The indicators called "Stochastic Oscillator" and "Williams %R" also belong to this group. The original RSI was developed by W. Wilder in 1978. The developer created it for trading stocks in The New York Stock Exchange. Since that, index has become widely used and now, every trading platform has integrated it inside theirs charts. New technologies let users calculate RSI very fast and observe its data from every PC or mobile phone. This solves the problem W. Wilder has mentioned in his work: the necessity of having to keep up to enormous amount of data. Original calculation splits into two formulas. First of all, the Relative Strength has to be calculated:

$$RS = AUP / ADP \tag{1}$$

where: RS − relative strength;
AUP − average gain of UP periods during the specified time frame;
ADP − average gain of DOWN periods during the specified time frame.

W. Wilder recommends using of 14 days periods. According to him, on day 15 and more, the price changes in unpredictable way for RSI. Till that, the oscillator's indication goes ahead of price line and that's very important for trader who wants to forecast the price of securities. The RS data from the 1st formula has to be used in RSI calculation:

$$RSI = 100 – (100 / (1 + RS)) \tag{2}$$

The calculated RSI value always fluctuates between 0 and 100. If RSI goes above 70, Wilder suggests calling this momentum the "overbought" market. It is mean that desires of the securities buyers are satisfied and their enthusiasm starts to fade. Therefore, it is the moment of the so-called "Bear Market". Thus, in the FOREX market, a trader can make a "short" (sell) order for earning the profit of currency's depreciation. Market becomes the "Oversold" when the RSI drops under 30. This moment is the sign that the securities prices will be reversed and the so-called "Bull Market" will begin. At the moment of the indication, a trader can make a "long" (buy) order and hope for profit of currency's value gain. The RSI has certain disadvantages. The index inventor and other researchers of this index do not recommend relying on it 100%. Wilder recommends using the RSI alongside with the divergence between price line and RSI line. His other recommendation is monitoring the resistance and support levels. Taran-Morosan [7] reduced the highest level of RSI to 67.5 and increased the lowest level to 32.5 in his research. He asserts that the investment results of the US stock market are better than using the classic RSI. Le Beau & Lucas [8] applied the indicator in futures market. They suggest using RSI with 75 as the "overbought" and 25 as the "oversold" markets for better results. However, the future literature observation will reveal that most of researchers stay on classical 30/70 interpretation of RSI.

What are the results of using RSI in different types of financial markets and different places of the world? Bhargavi, Gumpharthi & Anith [9] have applied the indicator for Indian Stock Exchange and concluded that it is very effective tool for creating portfolio. They had made this conclusion with strictly using Wilder's RSI modification. Also researches mentioned that using RSI with fundamental analysis gives even better results. Chong, Ng & Liew [10] examined US, Italy, Germany, Canada and Japan stock markets with three modification of RSI. Together with 14 days period, researches have used 7 and 21 day periods in calculation. Results with 7 days RSI were unprofitable in all markets. 14 days RSI gained profit on US and Germany stock markets and 21 day RSI showed positive result in Italy and Canada. However, none of the modifications can be useful for Japanese stocks. And it wasn't a surprise because W. Wilder warns about false signals and recommends to use it alongside with the divergence between price line and RSI line. His other recommendation is monitoring the resistance and support levels. Even more, from earlier literature observation, we know that Japan is one of the firsts who used QE and it links us to thoughts that strong monetary instruments could distort signals of technical analysis. Spanish stock market was examined by Rosillo, Fuente & Brugos [11] for 23 years period from 1986 till 2009. Original RSI combined with MACD (Moving Average Divergence Convergence) indicator were used. RSI was used for buying Spanish stocks. MACD indicates the trend changes and it was used for selling already bought stocks. They concluded that most of the companies where RSI showed best results have big market capitalization in comparison to the rest. Results on London Stock Exchange market were profitable in total but highlighted some difference between RSI buy and sell signals accuracy and profitability. During 60 years, "long" transactions generated 10 day return of 0.779% or an annual return of 22.44%. Meanwhile, "short" transactions showed negative result with -0.127% per 10 days period or -3.36% annually [12]. Even better results were achieved by Coakley, Marzano & Nankervis [13] in FOREX market. After the examination of 22 currency pairs during 20 years period, the researchers concluded that RSI was robustly profitable and can achieve annualized return up to 30%. However, slightly different RSI's modification from its originality was used there. Oversold market was kept when index value fell below 40 and overbought market was kept when index value reached 60. Another currency trade's accuracy data was acquired by Kiiski [14] in analysis of 10 currency pairs. The amount of positive trades with RSI fluctuates between 55% (THB/USD) and 68% (USD/CAD). Important for future investigation EUR/USD pair has 63% of such accuracy. Together with original index interpretation (30/70), results from less sensitive second scenario (20/80) and more sensitive third scenario (40/60) were received. The last one showed the best accuracy rate by 63% against 61% of original one. So, we can notice that little deviations from classical RSI could give better results in return or accuracy. Anderson & Li [15] also proved it with investigation of US dollar and Swiss frank currencies pair during 10 years from 1998 till 2009. The researchers tested lots of oversold/overbought market variations and discovered that 40/60 is better than 30/70 in profitability ratio. Even more, 35/65 modification is the most profitable for this specific currencies pair. They also mentioned that all trade's scenarios had few false signals which brought big losses for portfolio. This phenomenon was related to big popularity and widely using of original 30/70 combination. In other words, one trading strategy can't be efficient for all traders. Otherwise, all of them can

make profit as much as they want and this thought is far away from reality. So, increasing or decreasing number of the same strategy, users can change results of trades. It was also partly confirmed by Neely, Weller & Ulrich [16]. They had made a conclusion that FOREX market adapts to indicators of technical analysis and profitability results can't be the same over the all time.

So far, we have some lack of results from using RSI in stock exchange market and FOREX with applying of weekly periods instead of daily. Secondly, all researchers didn't point direct factors which distort accuracy of the results. Beaupain, Meng & Belair [17] pointed and achieved evidence that high volatility in financial markets makes usage of RSI more risky. However, fundamental reasons of such volatility weren't mentioned. This research tried to get answers on these problems with the most actively traded currency pair: EUR/USD. This particular pair took 23% of the entire FOREX turnover in the year 2016 [5]. The USD is the absolute leader in currency trading. Together with euro and all the other currencies, it has been chosen by 88% of all trades. Euro was next, with 31%, and Japanese yen was the third one.

3. The trading rules

The FOREX's most popular currency pair EUR/USD is chosen for this investigation. The data of this pair's price was collected from 01.01.2010 till 30.06.2017. Virtual trades have been made with the help of several modifications of RSI signals. Instead of using classical number of periods in oscillator's calculation, here scenarios with 8, 10, 12, 14, 16, 18, and 20 periods on daily (D) and weekly (W) price charts were chosen. Full conditions and rules for opening or closing trades are described in the Table 1.

Table 1. Main conditions for opening and closing the trading order

Entering LONG position	Exiting LONG position	Entering SHORT position	Exiting SHORT position	Position's amount
RSI<30	RSI>70	RSI>70	RSI<30	1000€

The long position is a transaction in financial markets when traders buy securities hoping that the price will rise. Imaginary 1000€ long orders were opened when RSI was under 30 and closed when RSI was above 70. The short position is a transaction in financial markets when traders sell securities hoping that the price will fall in the future. Imaginary 1000€ short orders were opened when RSI was above 70 and closed when it was under 30. All obtained data from trades was used for revealing results on accuracy, total profitability and profitability for individual period of time. Positive trades were divided by total trades and multiplied by 100 for calculation of accuracy.

4. Empirical results on using daily and weekly RSI

Seven daily scenarios were simulated in this work (Table 2). The biggest number of trades have captured with daily RSI calculated with 8 periods (D8). Second by the row, the D10 was more than twice insensitive with 19 trades during 7.5 years.

Table 2. Results obtained with daily RSI trading scenarios

Scenario	Trades	Accuracy, %	Total return, €	Profitable trades			Unprofitable trades		
				5%–10%	10%–20%	>20%	5%–10%	10%–20%	>20%
D8	49	61.22	-200	1	0	0	3	1	1
D10	19	68.42	10	1	1	0	0	1	1
D12	23	52.17	-285	2	0	0	1	1	1
D14	19	47.37	-305	1	0	0	1	1	1
D16	15	53.33	-60	4	0	0	0	2	1

Table 2 (Continued)

Scenario	Trades	Accuracy, %	Total return, €	Profitable trades			Unprofitable trades		
				5%–10%	10%–20%	>20%	5%–10%	10%–20%	>20%
D18	13	61.53	15	2	1	0	1	2	0
D20	7	28.57	-340	1	0	0	2	1	1

The best positive EUR/USD trades accuracy reached in the D10 (68.42%) and this result was even better then Kiiski [14] described in his work (63%). Very promising accuracy with more than 60% reached in the D8 and the D18 as well. But only two of mentioned three have finished with total positive very small return. The D10 gained 10€ in 19 transactions with 1000€. The D18 got 15€ in 13 tries. It is worth mentioning that broker's commissions and interest rates, which reduce total return, are not included here. Other 5 scenarios suffered losses and reasons for such poor results we can recognize by analyzing right side of Table 2. Almost all scenarios have suffered at least 1 trade which brought more than 200€ losses. In all situations, it happened in time lap during 01.08.2014 and 01.01.2016. Exactly in the same period ECB started very influential for currency QE program. In fact, it started at 01.01.2015 but the president of ECB M. Draghi mentioned about it at 04.09.2014 during press-conference and it was instantly shared by major press giants such as "The Guardian" [18] and "Bloomberg" [19]. So, financial markets reacted in opposite way from RSI signals. Euro started to lose its value against all others currencies including US dollar when all daily RSI showed buy signals. Hence, daily RSI in range of 8 to 20 periods can't produce correct suggestions for trading during era of such strong monetary instrument as QE. So, we can say that the staying away from trades could save more than 200€ for almost all daily scenarios. Even more, all situation suffered losses in range from 10% to 20% which happened during the similar United States QE program. It started in November 2008 and US officials mentioned that it is time to end it in the beginning of 2010 [20]. RSI of all scenarios showed to buy euro against dollar signals but markets reacted in different way, i.e. started to buy US dollar and its value rose up. After first QE, FED launched QE2 and QE3 which weren't such powerful as the first one. Therefore, some of RSI modifications have made accurate forecast. The D10 gained more than 100€ from right trade during Q3 and the D18 − during Q2. Table 3 shows how trade's accuracy and profitability located in time frame. This data explains when scenarios acquired the biggest profits and losses. We can see the main tendency −the longer open order lasts −the bigger chances of losses.

Table 3. Daily trade's results in aspect of time

	1 month	2 months	4 months	6 months	12 months	Total
D8						
Accuracy, %	100	46.15	36.36	0	0	61.22
Return, €	430	-10	-135	-230	-255	-200
D10						
Accuracy, %	100	100	80	0	66.67	68.42
Return, €	25	240	110	-200	-165	10
D12						
Accuracy, %	100	100	71.43	25	20	52.17
Return, €	55	155	10	-235	-270	-285
D14						
Accuracy, %	100	100	44.44	0	25	47.37
Return, €	20	140	10	-190	-285	-305
D16						
Accuracy, %	100	100	100	60	16.66	53.33
Return, €	40	50	90	30	-270	-60

Table 3 (Continued)

	1 month	2 months	4 months	6 months	12 months	Total
D18						
Accuracy, %	No trades	No trades	75	100	42.86	61.53
Return, €	0	0	125	125	-235	15
D20						
Accuracy, %	No trades	No trades	No trades	40	0	28.57
Return, €	0	0	0	-145	-195	-340

The D8's 21 trade of 49 were executed during 1 month with 100% of accuracy and they gained 430€. But the weakness of this modification is in other 28 situations that were kept more than 1 month and that guaranteed losses of portfolio. Other RSI modifications sharply reduced number of trades executed within one month. The D12 had 2 trades. The other ones had 1 or no trades. The two of scenarios (D10, D16) kept high accuracy ratio in executed trades within 4 months. The D18 had no executed trades in 2 months but kept 100% during half a year. These time intervals can help to set up monitoring distance for possible using of monetary instruments by central banks.

6 weekly RSI scenarios were completed during the same time period (Table 4). It is interesting, that the usage of weekly periods in RSI calculation wasn't mentioned in any earlier researches observed.

Table 4. Results obtained with weekly RSI trading scenarios

Scenario	Trades	Accuracy, %	Total return, €	Profitable trades			Unprofitable trades		
				5%–10%	10%–20%	>20%	5%–10%	10%–20%	>20%
W8	7	42.86	-215	0	0	0	1	0	1
W10	5	20	-190	1	0	0	0	0	1
W12	5	80	-100	1	0	0	0	0	1
W14	5	80	10	1	1	0	0	0	1
W16	3	66.67	375	0	1	1	1	0	0
W18	3	66.67	220	0	1	1	0	1	0

Despite the fact that weekly RSI can show even better return results than daily modifications, weekly scenarios execute much less number of trades. The most sensitive W8 generates 7 trades and W18 with W16 − only 3 in almost 8 years. The best accuracy reached with RSI was calculated on 12 and 14 period basis. 4 of 5 signals were accurate. One inaccurate was found in the time frame from August 2014 till May 2017, i.e. during the announcement and beginning of European QE. Unfortunately, impact of this monetary instrument brought loses which equals or is bigger than profit obtained in accurate trades. In cases of W16 and W18 the best results on return were reached. The result could be better if only one negative trade would have not been executed at all by knowing that index could not hold against the European QE. In W16 and W18 cases, QE factor brought loses of 75€ and 145€ accordingly. The biggest gains were earned when RSI suggestion coincided with effect of monetary instrument. For example, the W16 scenario RSI signaled to buy euro against dollar in May 2010. Few months later FED announced second round of QE. Therefore, US dollar sharply lost its value and earned about 200€ for W16 portfolio. However, small number of trades and years-long waiting for results (Table 5) makes weekly RSI being not very popular.

Weekly trades had split into 1 year long and longer than 1 year orders. Very positive accuracy and return results were received when trades were executed within 1 year.

But major number of trades lasted more than a year and it makes harder to control risks. Only two of six weekly scenarios had positive return in more than year longer trades. W16 and W18 did it with accuracy of 50%, although. W12 and W14 suffered losses with even bigger accuracy. It makes us think that trades should be planned to execute within 1 year.

Table 5. Weekly trade's results in aspect of time

	<1 year	>1 year	Total
W8			
Accuracy, %	60	0	42.86
Return, €	20	-235	-215
W10			
Accuracy, %	50	0	20
Return, €	45	-235	-190
W12			
Accuracy, %	100	66.67	80
Return, €	85	-185	-100
W14			
Accuracy, %	100	66.67	80
Return, €	180	-170	10
W16			
Accuracy, %	100	50	66.67
Return, €	190	185	375
W18			
Accuracy, %	100	50	66.67
Return, €	190	30	220

Otherwise, RSI can't guarantee positive result. The time monitoring should be done together with monitoring of central bank's actions. In other words, RSI signal should be evaluated through the prism of time and upcoming monetary instruments.

Conclusions

The technical analysis and RSI can be used for investing in FOREX. The article proved the insights of early researches that accuracy of RSI reaches about 60% for some of index modifications. Even more, weekly modifications of RSI reached precision of 80%. However, such accurate forecast doesn't ensure positive profitability of EUR/USD pair based investment portfolio because of transactions that suffered losses with more than 20% per trade. Meanwhile, correctly forecasted transactions gained more modest return. The best result for return was shown in weekly RSI scenarios with 16 and 18 periods in index calculation.

Earlier researches made suggestions that two factors can distort the accuracy of RSI signals: wildly using of it and market's adaptation to it. This article showed another distorting factor – the monetary decisions of central banks. The RSI can't provide correct signals on EUR/USD during the Quantitative Easing program. Though, incorrect signals occurred in other periods but the biggest losses were suffered during QE program run. Depending on modification, daily RSI scenarios had very precise accuracy in time lap from 1 month to 6 months. Monitoring period for weekly RSI scenarios was one year. It is important to watch for ECB and FED announcements for reacting if they plan to use such monetary instruments in these time laps. Messages of QE start and finish make impact on currency pair trend for the period from 1 to 6 months. Such monitoring can save up to 20% of investment amount. Even more, the coincidence of effects of monetary policy and RSI signals can lift up trade's profitability up to 20%.

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Development of Logistic Centres in the Countries of Central and Eastern Europe

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Abstract

Development of logistics in eleven EU countries from the Central and Eastern Europe region becomes more significant in terms of effective service of international supply chains. Logistic centres are the logistic facilities that conduce to the increase in complexity of logistic services and influence the growing interest of sustainable transport measures. The extensive experience of countries from the Western Europe in functioning of logistic centres shows that they are logistic links characterised by the highest functionality and the highest degree of complexity. Markets of logistic services in the countries of Central and Eastern Europe are not fully formed. It also relates to the issue of functioning of logistic centres in national logistic systems. Countries from the region of Central and Eastern Europe should take definite steps in the direction of strengthening the position of such hubs as logistic centres in their own logistic systems. The article identifies logistic centres in countries of the Central and Eastern Europe. According to European Association of Transport and Logistics Centres (Europlatforms), there are currently 46 logistic centres in the region, which are in line with the European practices. Individual countries differ, e.g. in terms of the number of centres, their functionality, occupied surface, specific solutions. The article describes the specific characteristics of the development of logistic centres in eleven countries of the Central and Eastern Europe, members of the European Union. The development of logistic centres in the region is a part of the European Union's policy as a part of development of transport intermodality and the improvement of logistic service standards in all member countries. The countries of Central and Eastern Europe, taking into account the colossal importance of logistic centers to improve the service of freight transport and stimulate the economic growth of regions in EU economies highly developed in logistics, should focus on intensifying a further development, extension of centers.

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Keywords: logistic centres, transport infrastructure, countries of the Central and Eastern Europe.

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1. Introduction

There are dynamic development processes in the transport sector of eleven countries from the Central and Eastern Europe (CEE), the current members of the European Union (EU). Countries upgrade and develop transport and logistics infrastructure in order to strengthen their competitive position. Aiming at creating an integrated European transport network, the European Union is interested in extension of both linear and point infrastructure (incl. logistics centres) within transport corridors of TEN-T network across the territory of all Member States. As a part of sustainable development of transport, the EU encourages investment in the development of railway infrastructure next to implementing logistics centres that improve intermodal transport services. Countries from the region of Central and Eastern Europe share an immediate interest in the development of intermodal transport which combine different means of carriage. The creation of logistics centres in the CEE countries results both from the principles of cooperation with the European Union and from the very positive effects on logistics services which centres achieved in the Western European countries. Centres have been functioning in the logistic systems of Western European countries for a long time. They were developing in different ways. As emphasized by I. Fechner, a growing importance of logistic services, the need to mitigate the consequnces of transport activities and globalisation influenced the adoption of policy supporting development of logistics centres. There is a clear division of Europe related to construction of logistics centres. Different economic systems implemented after the Secon World War in the countries of Western Europe and in the countries of Central-Eastern European region only hardened this division. Free-market economy showed its advantage in creation and functioning of logistics centres [9]. In the Western European countries, decisions that were made supported centres' development. So in Germany the first logistics centre was established in Bremen in 1985 and in 1992 a federal government initiated the construction of logistics centres network based on government plan. In Italy, the General Transport Plan (GTP) from 1986 defined a main and local level of logistic centres network with the indication of specific localisations [9]. The functioning of countries from the Central–Eastern region in the European Union expanded the intensity of cooperation within international supply networks. It also resulted in a clear development of transport needs and in dynamic increase of the role of logistic services. There are positive changes in the state of transport and logistics infrastructure in countries of the CEE region.

The aim of the article is to identify and present a character of logistics centres development in the European Union Member States from the region of Central and Eastern Europe. The article discusses logistics efficiency of the countries from the CEE region on the base of Logistics Performance Index (LPI) with special distinction of changes in the infrastructure area. It also presents European characteristics, from Europlatforms, which are appropriate for logistics centres and distinguish given nobes from other logistics hubs. These characteristics helped to identify logistics centres in the countries of Central and Eastern Europe, as well as present development issues of the centres in selected countries of the region.

2. Logistic efficiency of eleven countries from the region of Central and Eastern Europe, members of the European Union

In eleven countries of the Central and Eastern Europe, members of the European Union, more and more attention has been paid to the improvement of individual elements of national logistic systems. Markets of logistic services in the countries of Central and Eastern Europe are not fully formed. They are currently at the stage of ongoing development. Significant impact on the development of logistic services sector in the countries of Central and Eastern Europe, apart from internationalisation of business activity, has an increasingly better state of transport infrastructure. Transport constitutes an important tool for European integration. A challenge for the European Union is to equalise the quality of infrastructure in all countries of the region. Delays within the development of logistic infrastructure in the region are sizeable in relation to EU economies that are highly developed in terms of logistics. However, it is worth noting that described countries gradually eliminate the resulting infrastructure differences [6, p. 9–14].

The value of the European market, for 30 European countries, was estimated in the report "*Top 100 in European Transport and Logistics Services 2013/2014*" at 930 billion Euros. In 2014, Germany was the leader in terms of the value of logistic market (235 billion Euros). Also a relatively high position (7th place) in relation to 2012 was

maintained by Poland, where the value of logistic market was estimated at 53.4 billion Euros (Table 1). This is the best indicator within the group of eleven EU countries from the region of the Central and Eastern Europe. Table 1 shows the value of logistic market for the group of Central and Eastern European countries, members of the European Union.

Table 1. The value of logistic market in EU countries from the Central and Eastern Europe region in 2012 and 2014

Nr.	Specification of the market	in billion Euros in 2012	in billion Euros in 2014
1.	Poland	45.0	53.4
2.	Czech Republic	9.8	10.7
3.	Romania	6.9	7.9
4.	Hungary	4.2	4.9
5.	Slovak Republic	3.0	3.4
6.	Latvia	2.6	2.9
7.	Lithuania	2.6	2.6
8.	Bulgaria	2.5	3.1
9.	Estonia	2.2	2.2
10.	Croatia	2.1	2.1
11.	Slovenia	1.8	2.1

* Source: prepared on the basis of: *Top 100 in European Transport and Logistics Services 2013/2014*, Fraunhofer SCS, Nuremberg, http://www.scs.fraunhofer.de/content/dam/scs/de/dokumente/studien/TOP100_Executive_Summary_20132014.pdf; *Top 100 in European Transport and Logistics Services 2015/2016*, Fraunhofer Center for Applied Research on Supply Chain Services SCS, Nuremberg, https://www.scs.fraunhofer.de/content/dam/scs/de/dokumente/studien/Top 100 EU 2015 Executive Summary.pdf.

The Logistics Performance Index (LPI) is such an universal indicator that allows to identify, diagnose and compare logistic potential of the country in the international aspect. Logistic performance index focuses on international connections, as well as extensive national analysis. It is a comprehensive indicator that allows to assess how the TFL industry determines the development of the economy, also in the direction of its internationalisation. LPI is weighted average of scores in the following six dimensions [15]: effectiveness of the border control process, quality of infrastructure, easy organisation of shipments at competitive prices, competences and quality of logistic services, possibility to identify and track shipments, delivery of shipments within scheduled delivery time. The above-mentioned areas of LPI are connected and dependent on each other. The LPI analysis shows which elements play a greater role in attractiveness of specific market of logistic services and which inhibit the growth of logistic competitiveness of a given country. According to LPI index, positions of the countries from Central and Eastern Europe region, members of the European Union, in 2016 were located among 26th position – the Czech Republic, to 72nd position – Bulgaria. In 2016, Germany – 4.23 points, respectively Luxembourg – 4.22 points and Sweden – 4.20 points turned out to be the leaders in LPI. In order to come up to the best logistic standards, eleven countries from the Central and Eastern Europe region should focus on elimination of the obstacles identified by the World Bank in its study "*Connecting to Compete: Trade Logistics in the Global Economy*" from 2014–2016 [2–5]. This will have an impact on strengthening position of each country in the field of servicing international supply chains and it will be an attractive guide for foreign investor, who is encouraged to active economic cooperation by the high LPI [6, p.199–200]. Table 2 presents positions occupied by individual EU countries from the Central and Eastern Europe in terms of logistic efficiency based on LPI.

Table 2. The position of eleven EU countries from the Central and Eastern Europe, according to LPI index in 2010–2016

Specification	LPI position				LPI points (1–5)			
	2010 (155 countries)	2012 (155 countries)	2014 (160 countries)	2016 (160 countries)	2010	2012	2014	2016
Czech Republic	26	44	32	26	3,51	3.14	3.49	3.67
Poland	30	30	31	33	3,44	3.43	3.49	3.43
Latvia	37	76	36	43	3,25	2.78	3.40	3.33
Slovak Republic	38	51	43	41	3,24	3.03	3.25	3.34
Estonia	43	65	39	38	3,16	2.86	3.35	3.36
Lithuania	45	58	46	29	3,13	2.95	3.18	3.63
Hungary	52	40	33	31	2,99	3.17	3.46	3.43
Slovenia	57	34	38	50	2,87	3.29	3.38	3.18
Romania	59	54	40	60	2,84	3.00	3.26	2.99
Bulgaria	63	36	47	72	2,83	3.21	3.16	2.81
Croatia	74	42	55	51	2,77	3.16	3.05	3.16

* Source: prepared on the basis of: *LPI Global Rankings 2010,* World Bank, https://lpi.worldbank.org/international/global/2010; *LPI Global Rankings 2012,* The World Bank: http://lpi.worldbank.org/international/global/2012; *LPI Global Rankings 2014,* The World Bank, http://lpi.worldbank.org/international/global/2014; *LPI Global Rankings 2016,* The Word Bank, http://lpi.worldbank.org/international/global/2016.

A detailed specification of the number of points obtained for each of six LPI parameters was showed in the Table 3. In 2012–2014 Polish logistics was significantly distinguished in the region of the Central and Eastern Europe countries, while in 2016 more advanced logistic position was taken by the Czech Republic. The high position in the region reflects well on logistic competences of the country. In general in 2016 the Czech Republic, Lithuania, Estonia and Hungary strengthened their logistic position in the region of CEEs. In 2016, Lithuania has substantially improved its position according to the infrastructure quality parameter, obtaining 3.57 points. This is the best result in the region, which allowed to get 27th position according to above-mentioned this criterion among 160 studied countries of the world. The next position was taken by Hungary (index 3.48 points, 32nd place) and the Czech Republic with 3.36 points (35th place).

Table 3. A detailed list of points from LPI areas for EU countries from the Central and Eastern Europe in 2012–2016

Country	Customs			Infrastructure			International shipments			Logistics competence			Tracking and tracing			Timeliness		
	2012	2014	2016	2012	2014	2016	2012	2014	2016	2012	2014	2016	2012	2014	2016	2012	2014	2016
Czech Republic	2.95	3.24	3.58	2.96	3.29	3.36	3.01	3.59	3.65	3.34	3.51	3.65	3.17	3.56	3.84	3.40	3.73	3.94
Poland	3.30	3.26	3.27	3.10	3.08	3.17	3.47	3.46	3.44	3.30	3.47	3.39	3.32	3.54	3.46	4.04	4.13	3,80
Latvia	2.71	3.22	3.11	2.52	3.03	3.24	2.72	3.38	3.28	2.64	3.21	3.29	2.97	3.50	3.42	3.08	4.06	3.62
Slovak Republic	2.88	2.89	3.28	2.99	3.22	3.24	2.84	3.30	3.41	3.07	3.16	3.12	2.84	3.02	3.12	3.57	3.94	3.81
Estonia	2.51	3.40	3.41	2.79	3.34	3.18	2.82	3.34	3.07	2.82	3.27	3.18	3.00	3.20	3.25	3.23	3.55	4.08
Lithuania	2.73	3.04	3.42	2.58	3.18	3.57	2.97	3.10	3.49	2.91	2.99	3.49	2.73	3.17	3.68	3.70	3.60	4.14
Hungary	2.82	2.97	3.02	3.14	3.18	3.48	2.99	3.40	3.44	3.18	3.33	3.35	3.52	3.82	3.40	3.41	4.06	3.88
Slovenia	3.05	3.11	2.88	3.24	3.35	3.19	3.34	3.05	3.10	3.25	3.51	3.20	3.20	3.51	3.27	3.60	3.82	3.47
Romania	2.65	2.83	3.00	2.51	2.77	2.88	2.99	3.32	3.06	2.83	3.20	2.82	3.10	3.39	2.95	3.82	4.00	3.22
Bulgaria	2.97	2.75	2.40	3.20	2.94	2.35	3.25	3.31	2.93	3.10	3.00	3.06	3.16	2.88	2.72	3.56	4.04	3.31
Croatia	3.06	2.95	3.07	3.35	2.92	2.99	2.95	2.98	3.12	2.92	3.00	3.21	3.20	3.11	3.16	3.54	3.37	3.39

* Source: prepared on the basis of: *LPI Global Rankings 2010,* World Bank, https://lpi.worldbank.org/international/global/2010; *LPI Global Rankings 2012,* World Bank, http://lpi.worldbank.org/international/global/2012; *LPI Global Rankings 2014,* World Bank, http://lpi.worldbank.org/international/global/2014; *LPI Global Rankings 2016,* World Bank, http://lpi.worldbank.org/international/global/2016.

EU countries from the Central and Eastern Europe region have a long way to go to achieve a high parameters and infrastructure standards in transport, relevant to EU economies with highly developed logistics. However, involvement of these countries in varied EU Project and willingness to match these standards are relatively high.

Such involvement in the direction of extending and modernising of transport infrastructure in logistic systems of the region's countries, will gradually level and tackle existing discrepancy with appropriate stable EU support. These activities have to be adequate to the extent of changes in logistics in the world. It is necessary to actively develop an intermodal logistic network, which will transfer to improvement and efficiency of transport in the EU's single market. Therefore, building new and extension of existing logistics centres is an important task for all countries in the region from the perspective of intermodal logistic service.

3. Identification and development of logistics centres in the countries of the Central and Eastern Europe, members of the European Union

The concept of logistics centres became increasingly used. It is even misused, as many researchers have been recently emphasising, e.g. in Poland, if it is used as a synonym for such terms as: distribution centre, warehouse centre, handling terminal, central warehouse, logistic park. Therefore, there is a need to present characteristics relevant to the logistics centre, which distinguish a given logistic hub among the other logistic hubs. The specificity of logistics centre is reflected e.g. in the following definition "*it is a spatial object with its proper organisation and infrastructure that enable varied enterprises to operate activities on the cargo, in connection with its storage and movement between consignors and consignees, including handling intermodal transport and performing an activity on the resources used for this purpose*" [13, p. 296].

Exchange of experience and cooperation of logistics centres from different European countries is carried out within the framework of *Europlatforms* – an organization established at the end of 1991 [8]. European Association of Transport and Logistics Centres (Europlatforms) has worked at improving the definition of transport and logistics centres (TLCs) for many years. In the Europlatforms, Corporate Presentation Final-October 2015, the following definition of transport and logistics centre was given: "*Centre in a defined area within which all activities relating to the transport, logistics and distribution of goods, both for national and international transit, are carried out by various operators on a commercial basis*" [7, p. 4]. In accordance with Europlatforms the basic characteristics of logistics centre should be as follow [7, p. 4]:

- it must comply with European standards and quality performance to provide the framework for commercial and sustainable transport solutions;
- it is important that it is managed in a single and neutral legal body (preferably by a Public-Private-Partnership), in order to ensure synergy and commercial cooperation;
- it must allow access to all companies involved in the activities set out above;
- the operators can either be owners or tenants of buildings and facilities;
- it must provide the required facilities, equipment and services to the users, as well as public services for the staff;
- it should preferably be served by a multiplicity of transport modes (road, rail, sea, inland waterways, air).

Among the basic elements of logistics centre there are usually mentioned the following constituents: access control, service area, business centre, transport and logistics warehouses, intermodal warehouses, intermodal terminal and other. Europlatforms clearly emphasises that logistics centres contribute to the development of intermodal solutions in freight services, characterising by location availability to different branches of freight transport. Logistics centres play a crucial role in national logistic systems [7, p. 7]:

- providing tailored infrastructures, facilities and services to underpin and enhance the development of specialist activities within the transport and logistics market;
- generating synergies, effectiveness and added value to transport and logistics operators in comparison with traditional and generic industrial facilities;
- securing a more efficient connectivity with the main local, regional, national and trans-european transport networks (TEN-T);
- promoting the use of intermodal transport solutions when connecting long haul and the last mile transport services;
- serving cities and supporting sustainable and innovative urban distribution services;

- fostering the delivery of innovative and state of art transport and logistics services through the promotion and facilitation of specialist training and the use of new technologies.

Taking into account these common features, the Europlatforms enumerated operating logistic hubs on the territory of each EU-28 countries, which were considered to be logistics centres. According to data gathered by Europlatforms, Corporate Presentation Final-October 2015, in all EU-28 countries there were identified 240 logistics centres belonging to the most representative national associations. The largest number of that centres falls for: Germany (35), Spain (33), France (26) and Italy (21). Four countries represent 47.9% of TLCs and 62.1% of their gross surface. The following Table 4 presents the top 10 leading countries in terms of strength of logistics centres in the whole European Union.

Table 4. Transport and logistics centres in selected European Union countries

Nr.	Country	Number of TLCs	in %	Area (Ha TLC)	in %
1.	Germany	35	14.6	6.132	23.7
2.	Spain	33	13.8	3.726	14.4
3.	France	26	10.8	2.756	10.6
4.	Italy	21	8.8	3.460	13.4
5.	the Netherlands	15	6.3	999	3.9
6.	the Czech Republic	11	4.6	496	1.9
7.	Sweden	10	4.2	445	1.7
8.	Great Britain	9	3.8	858	3.3
9.	Denmark	7	2.9	1.195	4.6
10.	Belgium	7	2.9	977	3.8

′ Source: prepared on the basis of: Europlatforms, Corporate Presentation Final-October 2015, http://www.europlatforms.eu/wp-content/uploads/2016/01/Corporate-Presentation-2015-Europlatforms-Final_20151229.pdf, p.16.

Experiences of the Western European countries show a significant role of transport and logistics centres. Thus, in the Netherlands the work of transport logistics centres is responsible for 40% of the income of the transport complex, in France – 31%, in Germany – 25%. In the Central and Eastern European countries this share is on average at 30% and the payback period of logistic centre is on average 5–9 years [25]. Western European logistics centres form essentials main hubs in the European and national transportation systems, realising a wide range of services in TFL sector (transport, forwarding and logistics) and creating conditions for the efficient flow of goods in the supply chains and logistic networks. Logistics centres are links with the highest functionality and the highest level of complexity. They conduce to meet the criterion of transport co-modality. The development of logistics centres is supported by the state in a large part. There are varied enterprises in the area of logistic services that actively cooperate, including logistic, transport, forwarding, warehouse companies and those companies from CEP industry, which work for cargo handling as a part of logistic outsourcing, other service companies, business enterprises and production companies. The centres have a rich infrastructural and supra-structural base; they have areas for the future investments, as they are interested in stable development. Usually at the head there are partnerships from public or private sphere, initiating and then managing it. A good ex ample is the analysis of the character of logistics centres functioning, including Italy, Germany [9, 17–18]. Another characteristic of logistics centres is their infrastructure of intermodal transport, which occurs there mainly as a result of transport policy implementation, under which governments support the construction of reloading terminals.

Eleven countries from the Central and Eastern Europe region, which are the members of the European Union, represent 17.9% of TLCs and 12% of their gross surface. According to the Europlatforms report (Corporate Presentation Final-October 2015), there were 46 logistics centres all together in the countries of the Central and Eastern Europe that meet the European requirements to the right extent. The largest number of such centres is in the Czech Republic (11). The second position in terms of number in the region is Hungary (7). Poland was in the next

position, followed by Slovakia. The Table 5 presents the quantity and area of logistics centres in eleven Central and Eastern Europe countries, members of the European Union.

Table 5. Transport and logistics centres in the Central and Eastern European countries

Nr.	Country	TLCs number	in %	Surface (Ha TLC)	in %
1.	The Czech Republic	11	4.6	496	1.9
2.	Hungary	7	2.9	216	0.8
3.	Poland	6	2.5	346	1.3
4.	Slovakia	6	2.5	89	0.3
5.	Croatia	4	1.7	465	1.8
6.	Lithuania	3	1.3	592	2.3
7.	Estonia	3	1.3	340	1.3
8.	Slovenia	2	0.8	158	0.6
9.	Latvia	2	0.8	105	0.4
10.	Romania	1	0.4	250	1.0
11.	Bulgaria	1	0.4	70	0.3
	Total	46	17.9	Total 3127 Ha Average 68 Ha/TLC	12

′ Source: prepared on the basis of: Europlatforms, Corporate Presentation Final-October 2015, http://www.europlatforms.eu/wp-content/uploads/2016/01/Corporate-Presentation-2015-Europlatforms-Final_20151229.pdf, p.16.

The greatest virtue of logistics centres, their main task in logistic network is transhipment of intermodal transport units, service of intermodal transport. The centres provide a wide range of logistic services, as well as additional and ancillary services. The Czech Logistics Association collaborate with its associated TLCs. There are 11 TLCs represented by the above-mentioned organisation that operate in the country. These centres have a total surface of 496 Ha (Table 6). The centres have a convenient access to the road and railway transport infrastructure. Two centres Lovosice Terminal and Port of Usti nad Labem also serve inland water transport. While TLC M.L.C. Ostrava-Mosnov serve road, railway and air transport. Centres in the Czech Republic are financed on the basis of public-private partnership. Czech transport policy toward logistics centres is based on reconstruction of existing container terminals and construction of new railway transhipment terminals. Both, the Czech Republic and Hungary support building industrial zones as areas that initiate the development of logistics centres.

Table 6. TLC in Czech Republic and Hungary

Nr.	Name of TLC	Surface (Ha TLC)
	Czech Republic	
1.	Terminal CeskaTrebova	138
2.	Terminal Přerov	100
3.	M.L.C. Ostrava-Mosnov	90
4.	Lovosice Terminal	70
5.	Horní Počernice	40
6.	Port of Usti nad Labem	32
7.	Terminal ZLIN	7
8.	Plzen Terminal	5

Table 6 (Continued)

Nr.	Name of TLC	Surface (Ha TLC)
9.	Terminal Praha Zizkov	5
10.	Terminal Brno	5
11.	Terminal Ostrava-Paskov	4
	Total	496
	Hungary	
1.	Bilk Kombiterminal	100
2.	BP Szabadkikötő Log Zrt.	50
3.	Port of Baja	21
4.	Delog Kft.	16
5.	Logiszol Kft.	15
6.	Globallog Kft.	10
7.	Logistár Kft.	4
	Total	216

′ Source: prepared on the basis of: Europlatforms, Corporate Presentation Final-October 2015, http://www.europlatforms.eu/wp-content/uploads/2016/01/Corporate-Presentation-2015-Europlatforms-Final_20151229.pdf, p. 28, p. 33.

Association of Hungarian Logistics Service Centres is MLSZKSZ, which represent 90% of TLCs in the country. Logistics centres are located in the area of 216 Ha (Table 6). A sufficient number of centres is financed on the basis of public-private partnership. A good example here is Bilk Kombiterminal, an important link in Hungarian logistic system and regional connections. Rail Cargo Terminal – BILK Ltd. (Budapest Intermodal Logistics Centre) is situated in the heart of Central–Eastern Europe, where the Trans European Network crosses each others. This is a great opportunity for the logistic centre to be the main turning point at this area [19]. The Hungarian logistics centres mentioned above serve a complex intermodal transport railway-road. Such centres as BP Szabadkikötő Log Zrt., Port of Baja, Globallog Kft. serve also inland water connections. TLC Globallog Kft performs also air transport.

In the logistic system of Poland, logistics centres, as point elements of logistic infrastructure, come under the main hubs of logistic network, next to seaports. Europlatforms counted three so called "integrated logistics centres", operating throughout the country and being in line with the European standards, such as:

- Silesian Logistic Centre Join Stock Co. in Gliwice [20];
- International Logistic Centre "Euroterminal Sławków" in Sławków [16];
- Logistic and Investment Centre Poznań CLIP LLC in Swarzędz-Jasinia [1].

In turn, Greater Polish Logistics Center Konin-Old Town JSC in Modła Królewska by Konin [24], built in accordance with the conception of dispersed logistics centre, was not included in the Europlatforms report. Currently, the largest centre is International Logistic Centre "Euroterminal Sławków" (140 Ha TLC). Europlatforms included also three centres built in Pomeranian and West Pomeranian Voivodeships: Pomeranian Logistics Centre in Gdańsk, Logistics Centre Gdynia and West Pomeranian Logistics Centre in Szczecin.

Logistic centres perform the following roles in logistic system of Poland [11, p. 91–92]:

- input/ output of the system;
- supporting the growth of intermodality of railway transport;
- integrating economic regions;
- consolidation of loads into large cargo streams;
- creation of conditions for the growth of transport co-modality;
- shaping quality and parameters of logistic system.

In Poland, there is no coherent concept for the development of intermodal logistic network and there is no governmental programme for construction of logistics centres, as it was in time in the case of Italy and Germany. The national logistic system of Poland is influenced by the market forces and individual activities of public-sector

institutions at the local level. It develops in a different way as it was in Western European countries. The logistic system of Poland consist of few logistics centres, exacerbating the gap in geographical disproportion of distribution of such facilities in the country. While analyzing the location of existing logistics centres in Poland, it can be noticed that their development concentrates in Greater Poland Voivodeship, Silesian, Pomeranian and West Pomeranian Voivodeships. There are many more container terminals in the logistic system of Poland (their number amounted to 28 in 2010 and showed an increasing trend, extending to 35 terminals in 2014) and a rich base of monotransport warehouse centres, which fulfill the demand in a modern warehouse space, being located in isolation from the railway infrastructure. While analyzing the location of container terminals, it can be seen that their development is also concentrated mainly in Greater Poland, Silesian and Pomeranian Voivodeships. In Poland, the network of container terminals belongs to 17 business entities and its largest part is owned by PKP Cargo SA. It is necessary to add missing logistics centres to the logistic network of Poland, as they are key elements in the logistic system. It should be done with the use of public-private partnership model. Location indications of logistics centres, proposed by the scientific community as a part of Ordered Research Project No. PBZ-023-13 named as "The concept of location of logistics centres in Poland" and realised in 1998–1999, remain valid [11, p. 95–96].

Slovakia Europlatforms awarded 6 TLCs. The biggest of them are Terminal Dunajska Streda (28 Ha TLC) and Bratislava Palenisko (21 Ha TLC). In Croatia 4 centres were mentioned, these are: PloceFree Zone (215 Ha TLC), Dry Port Miklavlje (200 Ha TLC), Dry port Skrljevo-Kukuljanovo, Cro Kombi Terminal Zagreb. All logistic hubs mentioned above provide intermodal transports in the road-rail relation.

Lithuania priorities the investment in the development of transport infrastructure. Three Lithuanian logistics centres are being built. This process is actively supported the government. Those centres will constitute important hubs in the national transport system as well as in the European system, providing a wide range of services in TFL sector. Public logistics centres are constructed in the most appropriate locations: Vilnius, Kaunas, Klaipeda. These locations are the place of building the following logistics centres: Vilnius Logistics Centre, Kaunas Logistics Centre and Klaipeda Logistics Centre, which are built in stages [14]. The logistics centre in Vilnius and intermodal terminal will occupy an area of 300 ha together. There intermodal terminals in Vilnius (VIT) and in Kaunas (KIT) already operate. Thus, the first stage of construction work is finished. The official opening of terminals took place in 2015. The project is financed by Lithuanian Railways (AB "Lietuvosgeležinkeliai") with the support from the EU Cohesion Fund. The project's aim is also to meet one of the EU objective: reduce the usage of roads and move a large part of freight transport to railway. Here are the stages of construction of Public Logistics Centre in Vilnius (PLC) [23]:

- Stage I – construction of inland intermodal terminal with all necessary infrastructure on the area of 9 ha in Vilnius, not far from the Vaidotai railway station;
- Stage II – design of 104 ha area of Public Logistic Centre, which will be developed on the southern Vilnius ring road);
- Stage III – an area of 300 ha of Public Logistic Centre will be created beside (below) the Vilnius ring road.

Here are the stages of construction of Public Logistics Centre in Kaunas [12].

- Stage I – the construction of intermodal terminal with the entire necessary infrastructurem which has tracks for standard gauge railway (with a rail gauage of 1435 mm), as well as tracks for broad-gauge railway (with a rail gauage of 1520 mm). The terminal capacity will amount to 1120 TEU. Access to the terminal will be provided from A1 motorway, linking Vilnius, Kaunas and Klaipeda.
- Stage II – once the "RailBaltica" line is build, it will be possibile to logistically operate freight trains that transit between different gauages, both on normal and broad-gauge railway lines. After establishing a logistic park in the former industrial zone of Kaunas (Palemonas, Naujasodis) and free trade zone of Kaunas it is necessary to ensure convenient conditions for the effective development of companies providing transport, logistics and other commercial services.
- Stage III – enlargement of storage space in the territory of the terminal and logistics centre after reaching the handling capacity of 100 000 TEU per year.

Such a great logistic projects as construction of logistics centres are carried out in Lithuania for the first time.

In Estonia there are 3 TLCs represented by Estonian Logistics and Transit Association. These are the following

centres: Muuga Harbour (170 Ha TLC), Port of Sillamäe (100 Ha TLC), Paldiski South Harbour (70 Ha TLC). In these logistic hubs, freight transports are served road, rail and sea transport. In Slovenia there are 2 TLCs represented by Slovenian Logistic Association: Port of Koper (110 Ha TLC) and Intermodal Log Ter Ljubliana (48 Ha TLC), facilitating full road-rail intermodality. Centres in Slovenia are based on a public management model. In Latvia there are 2 TLCs represented by Latvian Logistics Association (L.L.A.), facilitating full road-rail-maritime intermodality. These are: Port of Ventspils (65 Ha TLC) and Freeport of Riga (40 Ha TLC). Centres in Latvia are based on public-private partnership model. The last position in Europlatforms ranking in terms of the number of logistics centres were taken by Romania and Bulgaria. In Romania there is one TLCs, covering an area of 250 Ha – Port of Constantza. Its location enables comprehensive cargo operations in the relation of road-rail-maritime-inland-waterways intermodality. In Bulgaria there was also one TLC enumerated – (70 Ha TLC) – Yana Sofia Terminal.

Conclusions

The need for creating new and developing existing logistics centres in the countries of Central and Eastern European flows from the rules of transport cooperation within the European Union. The European Union aims in transport policy at the elimination of infrastructural obstacles, spending specific funds for this purpose. Transport policy of the European Union also assumes shifting 30% of freight, which is currently transported by road for distances over 300 km, to railway and ships. By 2050 the UE wants to transfer over 50% of such transport. Exsisting and still being built logistics centres will increase accessibility to the markets of the Central and Eastern European countries, enabling to adjust transport and logistics infrastructure to EU standards. Implementation of new logistics centres to domestic logistics systems in the region countries is conducted in stages. For example, in Lithuania, at the first stage, the works include the construction of intermodal terminals. Further stages involve, among others, extension of logistics parks, alongside terminals, with well-developed storage facilities. A significant part of added value will be created in the logistics centres.

In general, transport infrastructure in the countries of the Central and Eastern European region is less developed in comparison to the countries from the western part of the European Union. The presence of modern logistics centres providing a full logistic service will conduce to building an integrated European network of transport infrastructure. Construction of new facilities of this type and extension of existing ones will require undertaking of multidirectional activities between public and private sector in each country. However, an economic calculation should have a decisive role. The disparity between the countries of the Central and Eastern Europe in terms of the number of logistics centres and their comprehensiveness in logistic service in comparison to EU countries, which are highly developed in terms of logistics, will decrease. Benefits from incorporating these modern facilities of logistics infrastructure into logistics systems of Central and Eastern European countries will be more and more sensible, not only in the countries themselves, but in the whole European Union.

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Assessment of the Level of Maturity of Risk Management Culture in Municipal Offices in Poland

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Abstract

The risk management culture supports effective risk management and promotes the reasonable risk taking. Building the strong risk management culture is the foundation of the conscious risk management based on three basic pillars: organizational culture, employee awareness and involvement, and the well-established risk management system. It is the construction of behavioural patterns as well as risk management infrastructure and mechanisms that determine the effectiveness of risk management.
The article discusses the issue of building and improving the risk management culture. Considerations are an element of broader research into the culture of risk management in public organizations in Poland, the purpose of which is to seek answers to, among others, the following questions:
1. What are the relations between the culture of the organization and the risk culture and culture of risk management?
2. How are the risk management systems in public sector organizations built?
3. What are the determinants of the effective risk management?
4. How to build a culture of risk management and an effective risk management system in the organization?
Questionnaire surveys being the basis for analysis and assessment of risk management maturity were conducted from March to October 2017. The categorization method and the authors` maturity model of risk management culture were used to analyse the results of research and to assess the level of the maturity of risk management culturein the offices of local government units.

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Keywords: organizational culture, risk management culture, risk management system, maturity of risk management culture.

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1. Introduction

Building a strong risk management culture is the foundation of conscious risk management based on three basic pillars: organizational culture, employee awareness and involvement, and a well-established risk management system. It is the construction of behavioural patterns as well as risk management infrastructure and mechanisms that determine the effectiveness of risk management.

The aim of the article is to analyze and assess the level of maturity of risk management culture in municipal offices in Poland. In order to achieve this goal, considerations regarding the maturity of the risk management culture based on a literature query and empirical studies were made. These considerations are not a simple compilation of views contained in the literature of the subject, but are largely based on own thoughts of the authors and an attempt to model the problem of building and improving the risk management culture in a public organization. An authorial model of building and improving a risk management culture based on three main dimensions of this maturity in the offices of local government units was presented: organizational culture, awareness and commitment of employees and a developed risk management system. These dimensions were analyzed and evaluated in the research procedure, the essence of which was to determine the level of maturity of the risk management culture in municipal offices in Poland.

The presented considerations and analyzes are an element of a broader research into the culture of risk management in the organization and the effect of the participation of authors in the processes of building management systems in public organizations.

2. Risk management culture

Risk culture is a concept that is difficult to clearly define, interpret and study, if only because it consists of two highly capacious, complex, multidimensional categories i.e. culture and risk. In addition, culture and risk are part of different scientific disciplines (economic sciences deal with risk, and culture finds an important place in sociology, psychology and anthropology) that are characterized by other research methods. Analyzing the risk culture definitions available in the literature, S. Kasiewicz and L. Kurkliński distinguished the following approaches [1]:

a) culture plus: relying on the definition of culture, and the risk is emphasized as its reference – a detailed area of interest [2]. Thus, it is essentially its addition. An alternative suggestion is immediately made to change these roles, that is, to take the definition of risk as a basis, and treat culture as a supplement;
b) attribute, which emphasizes the characteristics of risk culture (strong, weak, clear, good, etc.) [3], referring, among others to the dimensions of culture and, above all, to avoid uncertainty [4];
c) instrumental – resulting from the perception of risk culture by financial institutions and its operationalization in the form of implemented programs [5];
d) narrow view – the risk culture includes the perception of the "risk appetite" in the organization [6].

Despite many common features, one can point out the differences between the concept of risk culture and the concept of risk management culture. The notion of risk culture is a much broader term, although it does not have one generally accepted definition. Selected definitions of risk culture are included in the Table 1.

Table 1. Selected definitions of risk culture

Definition	Author
Risk culture is a set of values, attitudes and patterns of behaviour towards risk, represented by a given person or group of people	P. Hopkin [7]
Risk culture is a concept that defines values, beliefs, understanding and knowledge about the risk taken by a group of people pursuing a common goal, in particular by employees of the organization or by teams or groups in the organization	A. Hindson[8]

Table 1 (Continued)

Definition	Author
Risk culture are the norms and traditions of individuals or groups within the organization that determine how they identify, understand, discuss and undertake activities related to the types of risk an organization faces and which it undertakes	Institute of International Finance [9]
Risk culture is the awareness of the need to manage risk at every level of the organization, it is the basis for effective risk management	Committee of European Banking Supervisors [10]
Risk management culture refers to the extent to which managers and relevant regulatory authorities understand and consider the risk management system and the risk management process	Institute of Risk Management [11]
Risk culture is a system of values and norms of conduct that shape employee decisions and actions. Determines the collective ability ... to: recognize, understand, openly discuss and undertake current and future threats to the organization; act consistently as part of the risk appetite; and ultimately achieve the strategic goals and goals of the organization.	Australian Prudential Regulation Authority [12]

Risk culture should be understood as awareness of the need to manage risk at every level of the organization and constitute a set of values, attitudes and behavioural patterns in relation to risk, represented by a given person or group of people [7, 10].The group's culture results from the repeated behaviours of its members (observable external activities related to risk, i.e. risk-taking decisions, risk processes, risk communication), and the behaviour of the group and people creating it are shaped by their attitudes (selected position adopted by the unit or a group of people with risk, shaped by their perception of risk, as well as their predisposition). However, both behaviours and attitudes are shaped by the culture of the group (Fig. 1). This cycle was called A-B-C, from English words: Attitude, Behaviour and Culture [13].

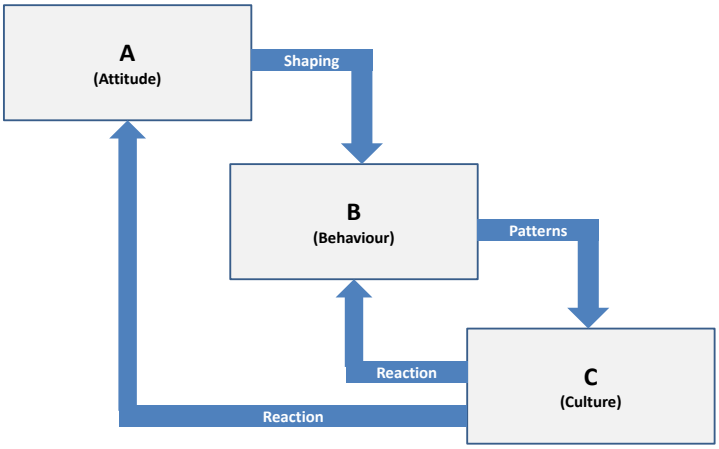

Fig. 1. A-B-C cycle [14-15]

The culture of risk lies at the heart of human decisions and everyday activities of each organization. This is a key concept for building a risk management culture in the organization and the basis for effective risk management in the organization. The culture of risk existing within the organization has a significant impact on the organization's ability to manage risk and its lack makes it difficult to achieve strategic, tactical and operational goals. The culture of risk management is connected with the architecture of the risk management system, organization of the risk management process and clear specification of the tasks of individual participants of this process. It is based on a risk culture and without a risk culture it is difficult to achieve. It requires a full understanding of the risk to which the institution is exposed and the way of risk management. It is the risk culture, and especially the attitudes of

organization members about risk, which determine the system architecture, organization of the risk management process and the way of managing particular types of risk, taking into account the level of risk tolerance and the adopted risk appetite [16, 21].

Bearing in mind that a correct and consistent culture of risk management is a key element of effective risk management, the organization should shape the culture of risk management through appropriate regulations and procedures specifying, among others, desirable attitudes in this regard, appropriate examples, motivational systems not only of financial nature, as well as methods of communication and training of employees in the scope of their responsibilities related to risk. Therefore, it is possible to point out the fundamental difference between risk culture and risk management culture.

Risk management culture combines all elements of risk management infrastructure, reflects common values, goals, practices and mechanisms that involve risk in the organization's decision-making processes and risk management in operational processes. It is shaped at the organizational level and can and should be built using guidelines and recommendations. It can be defined as a culture of conscious risk management, which involves full awareness of risk management at all levels of the organization's management and operations [16]. The management of the organization openly communicates threats, categories of risk, sets directions, engages employees in the risk management process and rewards appropriate behaviours.

Risk culture is a concept that reflects the personal beliefs and values of organization members, their individual predispositions and attitudes towards risk and ethical values. The relationship between risk culture and organizational culture is clearly visible, which is usually defined as social norms and employee-value stimulating systems, the right organizational climate, management method, shared meanings and symbols, cognitive schemas, behavioural requirements [17], system of thinking patterns and activities that are embedded in the social environment of the organization [18].

As already mentioned, the boundary between the concept of risk culture and risk management culture is very blurred. These terms are basically used interchangeably. Under the slogan of risk culture, we encounter a definition of risk management culture or a joint treatment of these two concepts. However, according to the authors, it is necessary to distinguish between these concepts and use the concept of risk management culture to determine the construction of a risk management system based on mechanisms that determine the effectiveness of this system thanks to full awareness of risk management at all levels of the organization. In reality, however, the notion of risk culture dominates in the literature, which is very often used to determine the construction and functioning of mechanisms that ensure effective implementation of the risk management process in an organization.

3. Construction and improvement of risk management culture

Building a risk management culture means building a risk management architecture based on the principles of ethics, accountability, communication and justice. It is the appropriate organization and construction of mechanisms that will make risk management effective due to the involvement of employees at all levels of the organization. The basis for creating these mechanisms is the built-in risk management architecture and implementation of the risk management system, however, at this stage, it is necessary to consider the construction of such a risk management culture that would make the system effective. Effective risk management enables, among other things, more effective provision of services, better use of resources, more efficient implementation of organizational and financial innovations, and supports the creation of the organization's value. Building a strong culture of risk management one should focus on its three main dimensions:

I. organizational culture;
II. involvement of employees at all levels of the organization;
III. risk management system.

Ad I. Organizational culture. First of all, the existing organizational culture should be identified and the characteristics of the organizational culture should be defined, which can be a pillar for building a culture of risk management. It should also pay attention to such important elements of shaping a risk management culture as education and risk awareness building.

Ad II. Involvement of employees at all levels of the organization. The organization's authorities should communicate to employees the guidelines on risk management culture.

Ad III. Risk management system. Designing a risk management system, and within its framework mechanisms, guidelines, recommendations, documentation, shaping risk appetite and designing documentation are extremely important foundations and an important stage in building a risk management culture.

Proposed activities within the above-mentioned areas are presented in the Table 2.

Table 2. Dimensions and proposed activities in the area of construction and improvement of risk management culture

The dimension of risk management culture	Proposed activities
Organizational culture	1. Identification of the existing organizational culture. 2. Identification and definition of attributes of organizational culture conducive to building a risk management culture. 3. Shaping the attitude to risk. 4. Determining the desired risk management culture in the organization. 5. Education and building risk awareness.
Involvement of employees at all levels of the organization	1. Communication by the management of the mission and vision of the organization. 2. Communicating exposure to risk and the impact of risk factors on the achievement of objectives. 3. Communicating the existence of a risk management system, 4. Communicating the stages of the risk management process, 5. Communicating the importance of information on the occurrence of risk factors for the success of risk management and organizational success. 6. Communicating risk tolerance and risk appetite. 7. Communicating the role of each employee in the risk management process, mainly the role in identifying and reporting threats. 8. Communicating how to report incidents that are risk factors.
Risk management system	1. Defining the context of the organization's functioning. 2. Construction of the framework. 3. Construction of risk management policies and procedures. 4. Determination of risk tolerance and risk appetite. 5. Construction of the risk management process. 6. Creation of tools for data collection, monitoring and reporting of risk management. 7. Integration of the risk management process with other processes in the organization.

An organization that has built a risk management culture can make a decision to modify it. In this situation, it will be necessary to design changes to improve the risk management culture. Figure 2 shows the author's model of building and improving the risk management culture. The model is dedicated to public sector organizations, including local government units, and is based on a methodology that takes into account both systemic and behavioural factors. This model (and precisely identified mechanisms that build a culture of risk management in public organizations) has been used to build a tool to diagnose the maturity of risk management culture in municipal offices in Poland.

The use of a model to build or improve a risk management culture must be based on successive stages. In Figure 3, these stages are included in the form of the so-called a circle of risk management culture based on the assumption of continuous improvement and therefore the repeatability of the cycle.

The author's model presented above is one of the approaches to building and improving a risk management culture. It is difficult to find similar models and guidelines in the literature on risk management. Rather, it should be referred to the development of companies providing consulting and auditing services, e. g. EY or the Institute of

Risk Management[1]. However, these solutions are dedicated to enterprises and their implementation in public organizations should be based on appropriate adaptation to the specificity of the public sector.

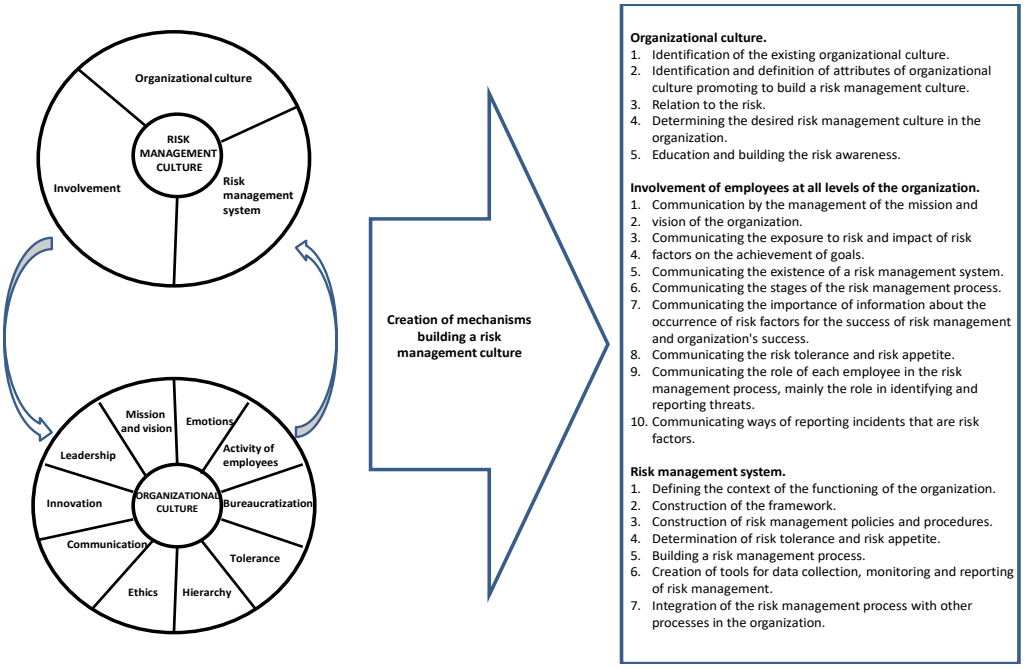

Fig. 2. Model of building and improving the risk management culture

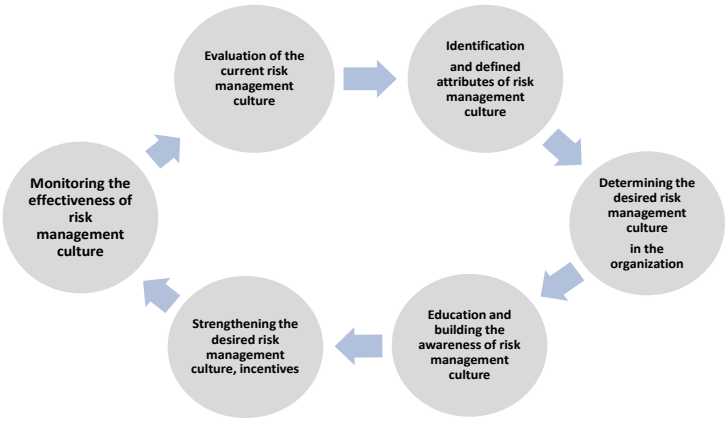

Fig. 3. Circle of risk management culture

[1]EY (formerly Ernst & Young) – an international corporation providing professional advisory and auditing services with the headquarters in London. The Institute of Risk Management (IRM – Institute of Risk Management) is a global leader in the field of knowledge on integrated risk management in organizations. The Institute was established in 1986 in response to the growing interest in the subject of risk management and the emerging demand for training services in this field. The headquarters of the Institute is London (https://www.theirm.org/).

4. Maturity of risk management culture in municipal offices in Poland in the light of own research

The management of the organization, striving to improve the culture of risk management, needs a certain point of reference in order to be able to determine the level of advancement of this process. Therefore, it needs a model that will allow comparing the results of the risk management culture assessment with the model, which will allow determining the level of maturity of this culture. Determination of the level of maturity is the basis for the development of a program of changes – detailed actions allowing achieving the desired level of maturity of the risk management culture. One of the existing models of process maturity can be adapted for this purpose, for example a maturity model of the risk management process (Fig. 4).

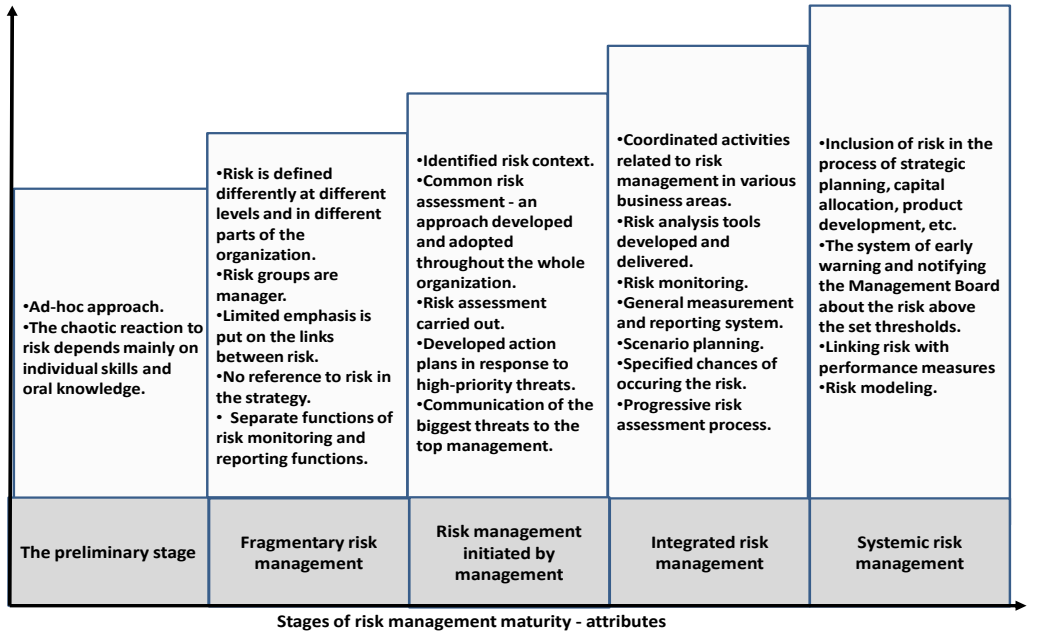

Fig. 4. Maturity model of the risk management process. Source: own elaboration based on [19]

Adaptation of the process maturity model is not, however, the optimal method for measuring and assessing the maturity of the risk management culture. A better solution is to develop your own model, which would be based on the risk management process maturity model, but at the same time take into account not only the maturity of the process, but also evaluate all components of the risk management culture.

Inspired by models of process maturity and taking into account the components of management culture, the concept of a maturity model of a risk management culture consisting of four levels can be proposed. The assumption of the model is the suitability for assessing the maturity of the risk management culture in the offices of local government units (Fig. 5).

The key issue in assessing the level of maturity of a risk management culture is the selection of a research procedure checking the maturity status of the risk management culture and qualitative classification, i.e. determining at what level of maturity the risk management culture is located. For the purpose of assessing the maturity of the risk management culture in the offices of territorial self-government units, the categorization method was used.

Categorization is a research procedure, the essence of which is the assessment of the condition or functioning of the object and the qualitative classification of the object [20]. Category is the quality class of the object, highlighted on the basis of a set value scale. Categorization can be focused on the comprehensive qualification of the organization's activities or on a partial qualification. It can be used to assess the organization from the point of view of the maturity of the risk management culture.

In order to identify and analyze the risk management culture in the offices of local government units, the categorization method was used, the essence of which is the assessment of the condition or functioning of the research object(s) and its qualitative classification. In the first stage of the research procedure, the selection of diagnostic measures was carried out. A comprehensive assessment of the maturity of the risk management culture requires that the structure of the assessment criteria be varied, but at the same time it is necessary to ensure the complementarity of individual criteria. These are very important issues from the point of view of the complexity and accuracy of the diagnostic analysis. In the research procedure, the structure of the 20 criteria of assessment proposed in the model of building and improving the risk management culture in the Table 2.

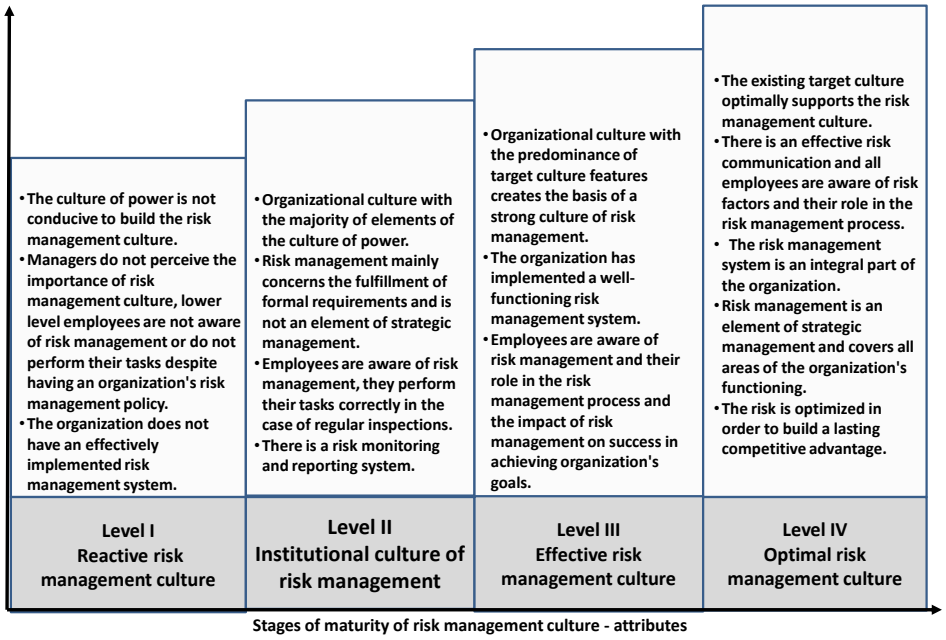

Fig. 5. An original maturity model of risk management culture

Determination of the value of individual criteria took place by assigning them a suitably selected range of questions from surveys used in research on organizational culture, employee involvement in the risk management process and maturity of the risk management system in the municipal offices examined. Answers from the questionnaires were compared to the constructed pattern defining the desired state – the so-called preferential aspects, granting points on a scale from 0 to 6 according to a previously constructed conversion table In addition, each of the 20 assessment criteria was awarded a weight on a scale of 1 to 3. The value of the risk management maturity index was determined according to the formula (1):

$$DKZR_i = \sum_{j=1}^{n} w_j * q_{ij}; \quad (1)$$

where: w_j – weight of the j-th criterion of assessment;
q_{ij} – a point-based verifying evaluation related to the i-municipal office;
$i = 1, \ldots, m$ – municipal offices;
$j = 1, \ldots, n$ – evaluation criteria.

74 municipal offices were examined. Targeted selection was used. The essence of purposeful selection is that the samples are qualified units that in the opinion of the investigator provide the optimal information from the point of view of the purpose of the study. For the second stage of the research, the offices of municipalities were qualified, in which the respondents stated that there is a risk management system in the office.

After establishing for each municipality office the values of the risk management culture maturity index, a qualification regulation was developed, which is a formalized approach to the principles and conditions for determining the category of the municipal office due to the maturity level of the risk management culture. The qualifying regulation defines a rating scale, hierarchical intervals of the DKZR index and categories of objects (municipal offices). The hierarchical levels are matched with the levels of risk management culture maturity (Table 3, Fig. 6).

Table 3. Accepted hierarchical intervals of the DKZR index and results of municipal offices

Maturity level	Score (Value of the DKZR index)	Number of municipal offices
Level I – Reactive risk management culture	0–80	11
Level II – Institutional culture of risk management	81–130	38
Level III – Effective risk management culture	131–180	24
Level IV – Optimal risk management culture	181–216	9

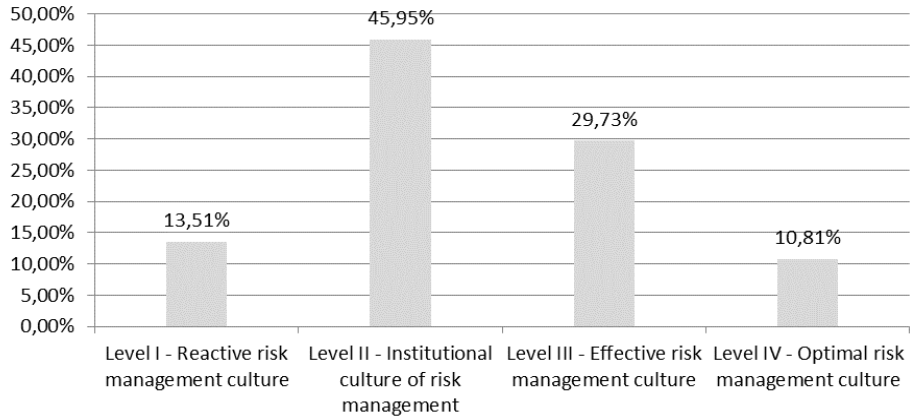

Fig 6. Distribution of municipal offices in terms of the level of maturity of the risk management culture

The presented research results indicate the dominance of the institutional culture of risk management in municipal offices in Poland. This level is characterized by the management's attitude to meeting formal requirements in the scope of risk management, which are imposed by law. In Poland, the Act of 27 August 2009 on public finances [22] imposed on managers of units of the public finance sector, including local self-government, the obligation to provide management control in managed units and within its risk management framework. Unfortunately, many of these units today treat risk management as a formal requirement and not an element of effective management. Yes, employees perform their duties in the risk management process, but they are motivated by regular controls.

Conclusions

Legal regulations and dynamic changes in the approach to risk management enforce the inclusion of risk management in the strategy of local government units and the involvement of not only management and risk managers, but even all organizational units and employees. It is mainly about achieving a specific state of process maturity defined as the ability of the organization and its processes to systematically provide ever better quality of services. The author's own scientific thoughts supported by the presentation of views contained in the subject literature allow to identify a research gap in this area and to draw conclusions about the use of process maturity models to assess the maturity of the risk management culture.

The conducted research indicates an unsatisfactory state of risk management culture in municipal offices in Poland. It is to be hoped that the growing number of research and studies on this subject as well as the proposed solutions will be a factor inspiring to introduce changes and improvements that will allow for achieving higher levels of risk management culture maturity in public organizations.

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Analysis of levels of Cooperative-networking Interactions of an Enterprise

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Abstract

The paper describes some findings of the study of enterprises' cooperative-networking interactions on the basis of the authorial method. The research focuses on the interaction levels, reveals grounds for the development of such relations in economic practices, brings to the front the interactions of functional management structures through the example of food market enterprises' performance of the region, and validates possibilities of forming such interactions.

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Keywords: cooperative-networking interactions, interaction levels, hierarchy, networks, mega-district, regional food market.

1. Introduction

Modern studies show that the form and practice of using intra- and inter-organizational processes of management in business structures map out their wide multiplicity, which includes hierarchical, market (quasi-market), networking (consumer networks and clusters) schemes [1–2].

Research findings show that in practice these formats operate simultaneously in most management structures, but with different degrees of observed occurrence, and at different levels of management. For example, within an organization, especially at the average management level, hierarchical relations of submission and execution are more common, and enterprise networks (business centers) are mostly occasional. Market or networking formats are

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peculiar in the sphere of partnership interactions with suppliers and consumers, while networking and cooperative formats are typical of joint-stock (corporate) management and in the external interactions.

Our research confirms existence of simultaneous actions in the management of different business entities that can be characterized as cooperative networking interactions.

2. Formulation of the problem

We consider cooperative networking interactions of enterprises as the processes of interpenetration and harmonization of simultaneous actions of hierarchies, markets and networks as a whole, which is based on the recognition of common goals and values, cooperation of their resources wholly or partially, with respect for the independence of the participants and their leaderships, their voluntary involvement, and under possible interaction with authorities and public structures [3–4].

Therefore, the cooperative networking interaction as a new emphasized fourth format allows the demonstration of the whole range of relations that develop in the actual modern business practice to analyze and form all the processes of business management in the inseparable consistency of their implementation at all levels as a whole.

For the methodological basis for the study of these processes, the authors apply the method of functional environmental analysis and projecting of the enterprise performance. The authors argue that the principles of this approach allow of investigating the implementation of the enterprise functions in the projection of different levels of relations or environments. This creates massive opportunities for detailed examination, identification of problems and consistent improvement of all the processes of a business entity [4].

3. Study of interaction levels

The article discusses the findings of the study of cooperative networking interactions (CNI) in a meat processing company in the Krasnoyarsk territory, where this method was applied (Fig. 1).

The most important aspect for the analysis of the company performance is evaluatin of reliability of partnerships and forms of their agreements with suppliers of raw materials and other resources [3]. *Lines 1–5* in Figure 1 show backward linkages of the company with the suppliers of raw materials, and *lines 6 and 7* stand for connections with the suppliers of other resources. The major implications are listed below.

1. The company under study has nine individual entrepreneurs (farmers) as the suppliers of the main resource, which is meat: communications lines 1. The interactions between them and the company are based on long-term supply contracts.

2. The company keeps communications lines 2 with consumer cooperatives. Interactions – “a cooperative – the company” are built on the basis of delivery contracts. In the case under study, eight cooperatives unite more than 1,730 farm households on the basis of the Charter. This structure has two levels of interaction a) the company participates in the financial support of the farm households on purchasing feed, small refrigerated vehicles for the transportation of meat products to the company, as well as veterinary services, etc. b) the company and a cooperative sign Product Delivery Contracts.

3. The company builds its relations with each of the seven farming units in the *communication lines 3* on the basis of long-term delivery contracts providing agreed yearly prices and volumes of supplies, mutual financial and transportation assistance in emergency situations.

4. Relations between the wholesale trade enterprises selling meat products and the company (*communication lines 4*) are built for procurements of one-time compensatory purchases of meat, in case when the main suppliers (*communications lines 1, 2, and 3*) do not deliver the products on time or in the required amount specified in the procurement contract, for whatever reason.

5. Relations with a wholesaler, supplying spices, additives, seasonings, casings for sausages, packaging products for semi-finished products, etc. are marked by *communication lines 5*, and are based on long-term contracts of supplies.

6. Provision of the company with technological resources is done on the basis of long-term contracts:

(a) with monopoly enterprises supplying water, heat, steam, sewerage, inclusive of annual tariff changes approved by the relevant state or municipal authorities;

b) with suppliers of other kinds of resources operating on a particular market (the Internet, telephone, spare parts, repairs, consumables, etc.), with an ongoing coordination of terms of activities.

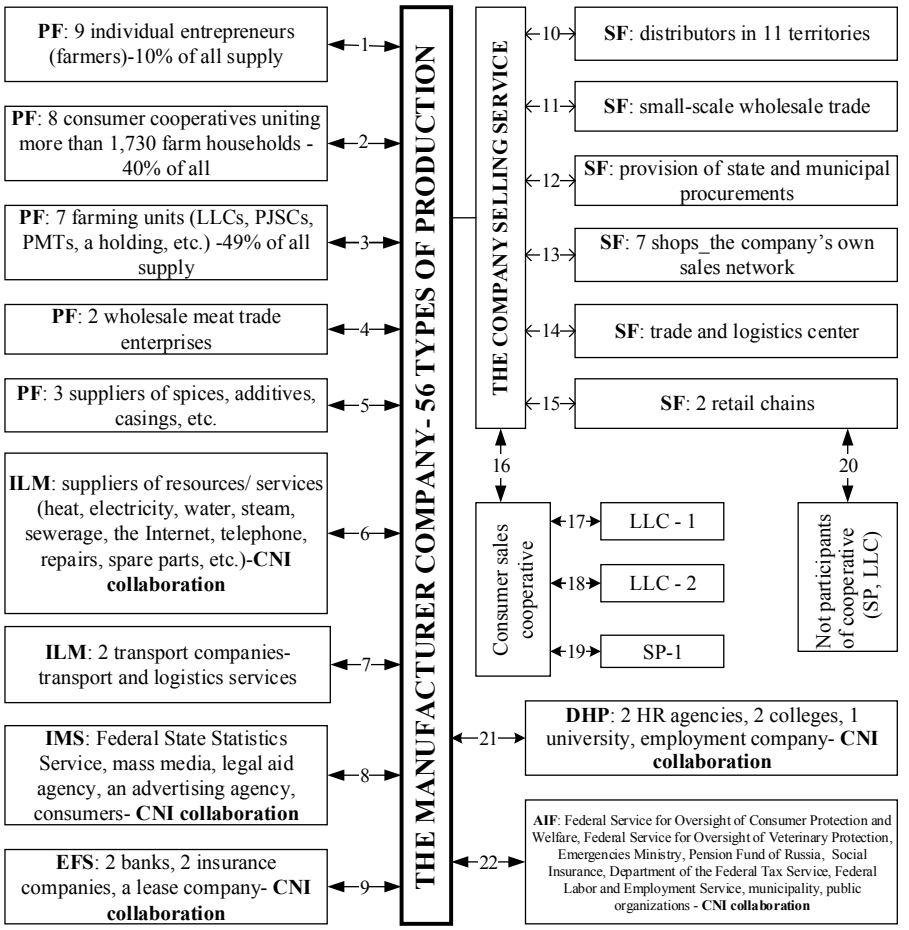

Fig. 1. Structure of cooperative and networking interaction of a company on the basis of functional and environmental approach

Notational conventions for company's functions:

*AIF – Adaptative integrational function	*ILM – Function of inventory and logistics management
*IMS - Function of informative marketing supply	*PF – Purchasing Function. SF – Sales Function. PTF – Production Technological Function
*FES – Function of Financial economic supply	*DHP – Function of development of human potential

7. An important role in the performance of the analyzed cooperative networking structure is played by the transport and logistics services, and on the basis of long-term contracts with two transport companies, individual details and price parameters are coordinated on an ongoing basis. Figure 1 shows this type of cooperative-networking interactions with communication lines 7.

4. Results of the investigation

The analysis of the production and raw materials support of the company shows that in this respect, it is possible to pinpoint two levels of cooperative networking interaction (CNI).

Farm households and consumer cooperatives (1.730 farms created 8 cooperatives) represent the first level of CNI. On this level, the relations are based on the cooperatives' Charters.

The second level of CNI is shown by the relations of independent business entities and the processing company. In our study, the former are presented by nine individual entrepreneurs (farmers), eight consumer cooperatives, seven farming units; two motor transport enterprises; two suppliers of spices, additives, seasonings, packaging products, etc., a number of market suppliers of resources (the Internet, telephone and repair services, spare parts, consumables, etc.), as well as monopoly enterprises supplying heat, water, steam and electricity.

The company builds another type of market-based relationship with two wholesale trade companies – suppliers of meat products, which deliver raw materials in case of short deliveries from the main suppliers (communication lines 1, 2 and 3). We can presume that cooperative networking interactions on the two foregoing levels is supplemented by the contracts for the meat products purchase on pure market relations with wholesale enterprises. There may also be some individual cases of one-time transactions, under the purchase of other infrequently-accessed goods or spare parts, or under the provision of similar services, including emergencies.

The third level of CNI is represented by the link "the company – the trade enterprises" (*communication lines 10-15*). Performance of consumer sales cooperative (*communication lines 16, 20, 21, and 22*) and a marketing cooperative (*line 17*) can be attributed to this level.

The analysis of the third level of CNI sets out the following interactions:

1. The company develops its own distribution network (10) by working in eleven territories of the region on the basis of CNI. The distributors are independent five enterprises and six individual entrepreneurs (IEs) which work on the basis of long-term distribution contracts, and take into account the peculiarities of interactions (in the case under the study, centralized delivery of products is organized for seven entities, and the rest withdraw stores on their own).

2. Small-scale wholesale trade (11) is built on a market basis by efforts of the sales department and provides the purchase of products range of the company under the study by small and medium-sized enterprises. They provide self-delivery of their products on the basis of the consignment notes and product payment before shipment.

3. The company participates in tenders for delivery of the product range under the state and municipal contracts (delivery agreements) on the market basis through sales service (12). The main buyers of products are schools, kindergartens, and hospitals.

4. All the product range is sold through the company's own sales network in seven shops, which is also regarded as an element of cooperative networking interaction of the company.

5. An important component of the cooperative networking interaction is the product sale through *the trade and logistics center* (14) (TLC), acting under the long-term supply contract. Prices, volumes, and the range of deliveries are agreed upon by every six months.

6. Two retail chains (15) work together with the company through the TLC on the basis of long-term supply contracts. Approval of the volumes, product range, and prices takes place quarterly. Under the terms and conditions of the contracts, these networks take responsibility for the product marketing, and provide them with "*good shelves*".

7. A new entity, *the production and marketing cooperative*, including the company as such and three more independent meat producers (16, 20, 21, 22, OOO-1, OOO-2, SP-1), became an extra – element of cooperative networking. This structure has been initiated by a number of enterprises producing similar products. As a result of this cooperation, the volume of deliveries and expansion of their range increased. This put the wind in working with the TLC, which delivers meat products in two trading networks, four large shops, four canteens, and two cafés under the terms of long-term procurement contracts.

8. *The production and marketing cooperative* extends its cooperation by signing agreements with three more meat processing enterprises. The latter deliver their products to the trade and logistics center (17) under the contract of consumer supply cooperative, allowing a greater volume, a sustainable product range, and favourable working conditions.

Therefore, the analysis shows that the marketing activity of the company is built within the format of cooperative

networking interaction on a long-term basis and common goals, with the focus of concerted action for sustainable work and profit. Cooperative networking interactions are inherent to the interaction of the company with distributors (10), its own sales network (13), and the trade and logistics center (14) including work with two trade networks (15).

The fourth level of cooperative networking interaction is built on the work of the company with the consumer and marketing cooperative (16), with its members (17–19) and with the cooperative's non-members (20).

In addition, it should be pointed out that the analyzed activities include hierarchical relations in the direction of small wholesale trade (11) and public and municipal procurement (12), which should be taken into account in the analysis of all the company performance.

Conclusions

The study of the level components of cooperative networking interactions of a particular company shows their diversity and the simultaneous application of hierarchical, marketing, networking relations for harmonization of interactions in the interests of the final results of their participants.

The method of functional environmental analysis and projecting of a company performance, in particular, the method of analyzing the levels of cooperative networking interaction, demonstrates the whole range of relations of business structures, identifies problems and finds operational decisions.

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The Role of Cooperative-network Interactions in Maintaining Competition in the Local Food Market

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Abstract

This paper examines the role of cooperative-network interactions between the market participants in instruments and mechanisms for maintaining competition in the local food market. Cooperative-network interactions are considered as a wide range of conditions for self-regulation of competition that allow all market participants to improve business performance and integrate joint efforts into increasing the level of domestic food market competitiveness. The special attention is given to understanding the processes of maintaining competition in the Russian domestic food markets.

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Keywords: regional food market, cooperative-network interactions, competitiveness of the food market, competition.

1. Introduction

Cooperative-network interactions between the participants of the food market being collaborative structures of interpenetration and harmonization of simultaneous action as whole, on the basis of sharing common values and goals and cooperation of resources or their parts, when the participants keep their independence and leaderships are the result of strengthening global competition and transformation of competition methods, adaptation of business structures to new mechanisms of work in the domestic and foreign commodity markets. Cooperative-network interactions in the food markets allow their participants to achieve greater results with simultaneous cost minimization and provide effective competitiveness and collective reputation of certain

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participants and of the whole network in general. Consideration of cooperative-network interactions as priority instrument in regulation of competition is a rather new aspect of a problem of modern local markets development. When studying the influence of cooperative-network interactions in regulation of market competition we were guided by the assumptions of the theory of collective reputations (Tirole Jean, 1996) which is relevant for the markets where information asymmetry is observed even with insignificant barriers. The food market can be referred to this kind of markets due to the existence of its economic agents' competitive actions that are not transparent enough. The issues devoted to the impact of globalization on the process of maintaining competition in the local markets are developed on the basis of B. Fischer's, F. Ezeala-Hrrison's and P. Eiglier, E. Langeard theories [3–4, 6].

The modern market of food products is developed in conditions when trade in the territories undergoes tough transformations aggravated with dependence on a number of related branches and the dynamism of economic processes. In this connection the cooperative-network interactions can be considered as a feature of the market of food products and at the same time as a "growth point" in its development. Reconsiderations of the role and the function of the market of food products in the system of public reproduction need to find a new approach to the research with the emphasis on the importance of cooperative-network interactions in the competitive relationships.

"The lack of regulation in such markets often leads to socially undesirable results – unmotivated increase in prices or the situation when the companies blocking more effective competitors' entry to the market survive. The regulation measures and competition policy have to be thoroughly adapted to the conditions of each specific industry" [5].

The purpose of this article is to define the directions for regulation of competition in the markets of food products with allocation of cooperative-network interactions. This paper is intended to focus on maintaining competition in the food market of the Krasnoyarsk territory which is rather specific due to its geopolitical position and resource base.

2. Instruments for regulating competitiveness

Analyzing the work's of Russian economists [1, 2], we suggest that regulation of competition in the local markets of food products should be focused on a number of directions connected to the increase of competitiveness and improvement of a competitive position. The mechanism for increasing competitiveness includes the following instruments:

1. The instrument for developing technological innovations in the food market. The conditions of increasing competitiveness of the food market depend on these innovations, i. e. they can be considered as the main factor of competitiveness improvement. Being a complex social and economic system, the market of food products solves the differentiated problems with the help of innovations: provides guarantees of economic and physical availability of healthy food for the population, fulfils its controlling function to coordinate interactions between the agrarian sector and the enterprises of food industry at a stage of starting a new manufacturing cycle. The specific feature of the market of food products causing the development of technological innovations is the low elasticity of demand for the main groups of food products with some variability of elasticity within these groups. Therefore, for the formation and maintenance of competitiveness our suggestion consists in state support of production and supply of the greater variety of substitutes with different ingredient content. This should be achieved with renewing national food traditions and increasing the competitiveness of food due to application of geographically endemic raw materials and wild crops, which are usually quite cheap. So, restoration of traditions to use local animals as a source of food (deer, roe) and produce authentic national dairy drinks will cause the renewal of cattle breeding, traditional for local nomadic Siberian people. Moreover, agricultural innovations in the sphere of crop production can become the driver of competitiveness for the local confectionery and bakery products and beverages.

On the Krasnoyarsk market of food there are almost no cheese products made using the traditional local recipes. But the restoration of local cheese production is much more rational in modern conditions, than imitation of the Italian-style cheese making.

Technological innovations in the market of food products affect progressive forms of providing trade services, where it is necessary to focus on increasing the availability of trade facilities and location conveniences for the buyers and decreasing food loss and food waste in the course of transportation and storage with the use of vending machines, mobile trailers and pavilions, farm stores. In some cases, it is necessary to apply delivery sales techniques (services of direct-sales representatives).

2. The optimization of logistics infrastructure can be considered as an instrument for the improvement of food deliveries from manufacturer to consumer. This can be achieved with various flexible forms of cooperative-network interactions, which will shorten the time of delivering food product to the consumer and reducing costs of food vending services. In conditions of transition from rivalry among producers to competition between suppliers the main instruments for the improvement of deliveries is targeted support in the form of lending at lower interest rates. At the beginning of the transition period, the executive authorities of the territory should become a guarantor for purchasing a certain amount of food products of the agricultural manufacturers. Unequal distribution of income and profit on different levels of product distribution is the limiting power of competition. Besides, the short shelf-life of many food products often stimulates oligopolistic deals of the logistics intermediaries. In this context, regulating activities should include development of an efficient manufacturing and distributing cluster which will on the one hand reduce the time of delivery and on the other minimize the risks of increasing economic concentration of the suppliers sector.

3. The instrument for regulating trade services costs consists in development of measures for trade margins optimization. From our point of view the regulatory measures should include:

- monitoring control of food prices in retail distribution networks, closed catering facilities (school and university cafeterias, kindergartens, hospitals);
- carrying out purchasing and grocery interventions, especially concerning seasonal food products;
- creating fixed corridors of purchase and retail prices for the socially significant food products;
- setting the upper limit for costs on packaging and branding for the socially significant food products with promotion in local mass media.

4. Food products cost optimization guided by the manufacturer has to be based on the following measures:

- reducing the share of costs of intermediary services and services of various contractors in the total cost of food products;
- transition of the initiative in the food supply chain in favor of food manufactures;
- protective measures of the regional authorities concerning high-quality certified food products;
- establishing a research and development to improve the utilities and facilities of food product manufacturers and breeding;
- stimulation of discount groceries selling food products at comfortable prices and with the minimal margin;
- granting tax benefits and subsidies to enterprises improving eco-friendly production and increasing competiveness of food products on the domestic and international markets;
- solving the problems of control efficiency for the food products sold by the enterprises which have received the targeted aid and tax benefits;
- considering guarantees of inter-company relations for agricultural manufacturers and retail trade enterprises by creating branch associations.

We suggest that two branch ministries have to be actively involved in the solution of problems connected to maintaining the competitiveness of the food market of the Krasnoyarsk territory: the Ministry of Agriculture on the one hand and the Ministry of Industry, Energy and Trade on the other. The Ministry of Agriculture will focus on the issues of regulating the competitiveness of agricultural products, food sovereignty of the market and smoothening the season component of creating the food stock on the market, while the Ministry of Industry will monitor prices and investments.

Moreover, the responsibility of the Federal Antimonopoly Service has to include regulating the development of technological innovations in production and monitoring fixed capital investments (in the context of controlling the merges of the capital and the companies' takeovers). The Krasnoyarsk Patent Support Agency may provide some assistance in controlling patent barriers for maintaining the competitiveness of the food market.

3. Instruments for regulating competitive position

In our opinion, the food market competitive position development implies the following priority measures:

1. Increasing export of food products to neighbouring regions and states, despite the modest prospects of food provision in the territory, carries the main strategic objective of the market development: at the initial stage import

phase-out technologies shall protect the local production, provide prospects and guarantees of trade areas and economy of scale; however, without export-orientation and inclusion of the food sector into the worldwide competition, there will continue deceleration and further stagnation of the closed economy producing uncompetitive goods. The existing export commodity structure may not be considered satisfactory in the context of stable development of economic territory of preferential treatment. For this reason, we believe that it is reasonable to support export-import trade relations with the CIS countries, countries of the Asia-Pacific Region and China, which market capacity, taking into account the demographic characteristics of the territories, exceeds significantly the indicators of the domestic market.

2. Entering the external food markets and consolidating our positions are tightly connected with the previous direction of the Krasnoyarsk Territory competitive position development as a regulating measure. It shall make its contribution into the differentiated development of the adjacent branches [1]. A real competitive advantage for consolidating the position of the food market is grocery trade, which, is the most promising economic driver at the present moment alongside mining and chemical industries. To actualize the grocery trade potential of the territory it is necessary to focus on the external markets. It can be achieved with:

- simplification of export and import tariff system for the CIS countries and countries of the Asia-Pacific Region, including VAT refund;
- providing non-discriminating access to the logistics export-import infrastructure for all economic agents in the sphere of trade;
- ensuring advantageous business regime for the partner states where the Ministry of Industry, Energy and Trade and the Ministry of Agriculture should become intermediaries and guarantors in conclusion of partnership agreements;
- improving the investor protection in the context of decreasing the risks of common market barriers to entry and exit;
- enhancing domestic manufacturers protection by foreign states through conclusion of partnership agreements and implementation of tariff benefits;
- ensuring accessibility and transparency of information for the participants of the food market of the Krasnoyarsk territory be means of consulting services of legal and economic character;
- providing targeted financial aid for local manufacturers, including small family business development, lowering corruption and optimization of control over the aid provided to such businesses.

3. Achievement of food market stability in the macro regional scale is mostly determined and associated with the general economic situation and state policy, which makes regional support measures a more topical issue [3]. The regulating effect should be focused on decreasing the negative influence of all branches connected to the food market by means of:

- imposing substantial penalties for activities causing environmental pollution;
- providing assistance in development of trade infrastructure of the food market;
- creating conditions for direct distribution of products by the agricultural enterprises and product manufacturers;
- increasing food product supply volume by improving farm capacities and creating adequate delivery and storage infrastructure;
- increasing food product manufacturing margin by implementation of technological innovations.

4. Ensuring optimal food consumption by various strata of the regional society is closely connected to the measures taken for maintaining social stability in the Krasnoyarsk Territory. Physical and economic availability of food products is connected both to stabilization of income for all strata of society and opportunity to get well-balanced eco-friendly foods now and in future. The major part of such regulation includes financial support of the poor, provision of well-balanced meals to pre-school and school students, implementation of resource-saving technologies and food waste processing technologies for the agricultural needs, use of healthy local and wild growing crops for food production.

The process of regulating competitive position of the food products market of the Krasnoyarsk Territory (Fig. 1) is directed to creation of conditions for strengthening its position in foreign markets, attraction of stable dividends from selling food in foreign markets, development and maintaining a favorable view of a serious and reliable partner, development of joint projects with the foreign companies. The key role in this process is given to the regional branch ministries in coordination with the Ministry of Economic Development of the Russian Federation.

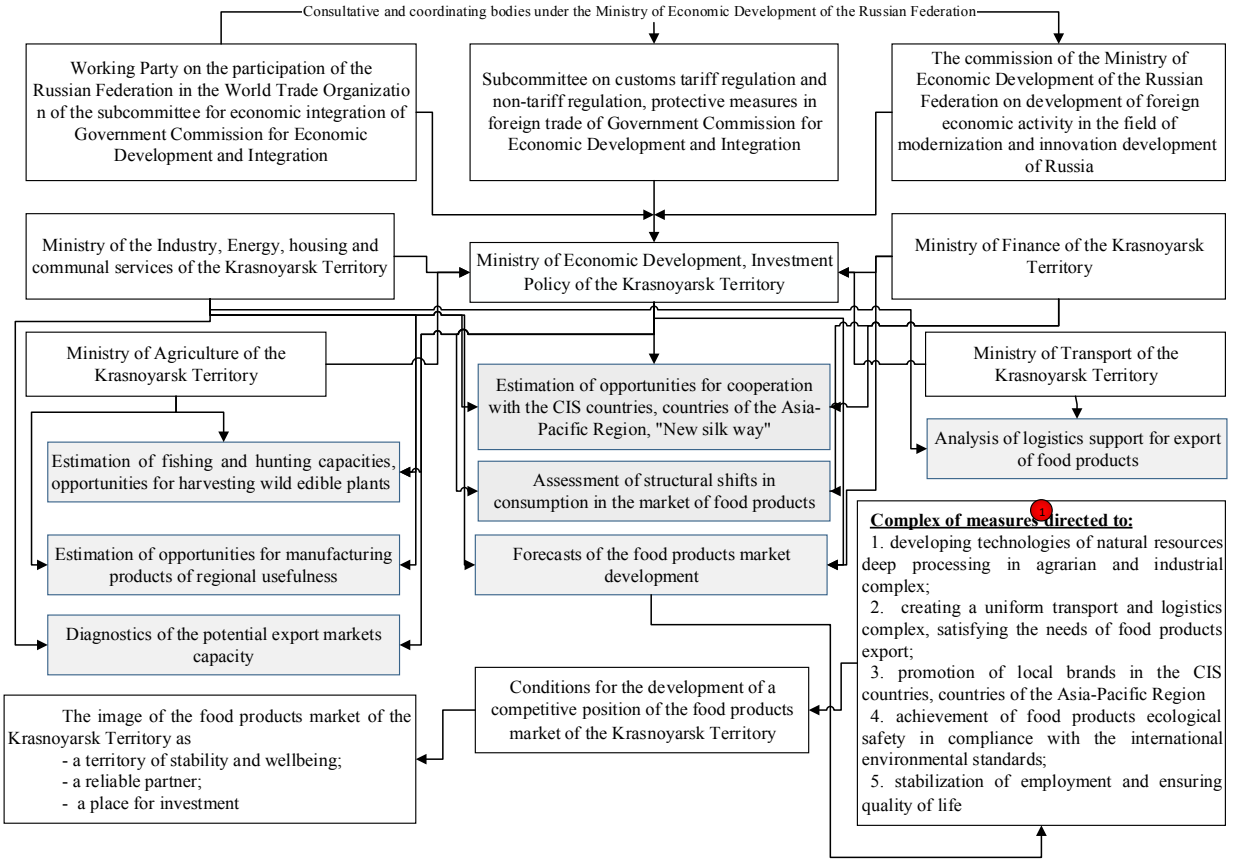

Fig. 1. The process of Regulating Competitive Position of the Food Products Market

Conclusion

Thus, our researches have shown that cooperative-network interactions combine all available competitive potential of the food market. They become the priority direction in implementation of the instruments for maintaining competition. The researches have allowed to coordinate all the measures within the uniform regulating influence and thereby increase the efficiency of the regulatory instruments for the solution of social and economic tasks, attraction of investments, ensuring national security, protection of consumers. Meanwhile, competition does not only influence the market as a complex social and economic system, it is also exposed to serious transformations which require a detailed study in order to define the relations between the modern competitive mechanisms and the regularities of the food market development. In this regard the list of measures suggested for the development and support of competitiveness and competitive position of the local food market with specification of the role of cooperative-network interactions, in our opinion, allow to take into account the features of the market functioning as a part of a services sector and promote the solution of problems associated with the increase in social and economic wellbeing of the territory citizens and stability of economy as a whole.

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Economic Factors of Lithuanian Inhabitants' Emigration: Current Situation and Forecasts

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Abstract

This research analyzes the economic factors of Lithuanian inhabitants' emigration comparing the main economic indicators between Lithuania and other EU countries. The significant differences of economic development allow consider them as main factors of economic migrants' international flows. The statistical modeling of Lithuanian economic development revealed the possible time period in future necessary to reach the economic indicators of EU countries that are the most attractive to live for Lithuanian emigrants. The statistical analysis results allow maintain that the decline of current Lithuanian inhabitants' emigration flows in future cannot be really expected.

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Keywords: depopulation; economic development; emigration; statistical modeling.

1. Introduction

Lithuania is country that meets the serious and continuous depopulation problem since 1991. Until 2017 it has lost about a quarter of its population. The population decline rate is quite stable (about -1% yearly) due to high emigration flows and negative natural increment of inhabitants. The massive depopulation problem is not so common in the world: Lithuania is the first in European Union (EU) and the fourth in the world according to its average annual population decrease rate. This huge depopulation can cause the very serious economic and social

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problems in future because the declining quantity of qualified labor force can slow the Lithuanian economic development and increase the burden for the state's social insurance system. The Lithuanian educational system also suffers from the country's depopulation: more than half (51.2%) of secondary schools were closed in 1996 – 2017; the number of schoolchildren decreased by 45.2%, the 36.9% of teachers and secondary schools managers lost their job in 2001 – 2017 and these negative processes continue. The Lithuanian higher education institutions also were affected by the depopulation phenomenon: the number of new students at Lithuanian universities in 2010 – 2017 decreased by 29.3% and the official forecasts show that this number in 2018 – 2025 will decline by 18.9%. The declining domestic markets and lack of qualified labor force for business companies make unattractive business environment in highly depopulated Lithuanian regions. Since 1996 some Lithuanian municipalities (Visaginas, Akmenė, Ignalina, Skuodas) have already lost 35% – 40% of inhabitants and the highest annual population decrease rates there are up to -2.31%.

The aim of this research is to analyze the economic factors of Lithuanian inhabitants' emigration. The main tasks of this research are: to reveal the factors of economic migrants' international migration flows analyzing scientific literature; to highlight the differences between Lithuanian and other EU countries' economies that attract Lithuanian emigrants; to forecast the economic development projections of Lithuania considering current statistical trends of economic indicators in the context of EU. The methods of this research include the review of scientific publications and the statistical analysis of the official statistics data.

2. Literature review

The decision to emigrate can be driven by many factors: personal, political, religious, and ideological motives, a desire for better quality of life, etc. [2]. Migration of economic migrants is considered as the result of big differences in economic opportunities over the world, especially in revenues [18]. Economic migration is usually associated with labor migrants [17], these citizens have a very important interest in being able to leave the state in which they were born to pursue opportunities and relationships elsewhere [27]. Making the decision to change the country of residence individuals calculate the value of their human capital for each region or country. Each individual assesses possible return and costs in a different way, so that migration to a country may be useful to some people and not useful to others [18]. According to Dimova and Wolff [4] the decision to migrate depends on two main factors:

- The differences in earnings in the country of origin and the country of destination including the migration costs.
- The strength of the preference for remaining in the country of origin [4].

The economic reasons are the primary factors for massive emigration from the post-communist regions, like Lithuania. These economic migrants search for better employment opportunities, higher pay, and seek to experience better living standards in the West due to deteriorating or unacceptable economic, political, and social conditions at home [26]. Income differentials are one of the basic push factors from the countries of migrants' origin. The chain effect occurs in mass emigration when the number of previous emigrants increases subsequent emigration flows. The long-established migrant communities generate new influxes, create a geographical continuity, develop migrant networks and often find jobs for incoming migrants, making migration the best way to realize one's skills and to secure personal and family economic prospects [10]. The perception of local labor conditions, combined with a lack of career opportunities, is the key driver of migration. In particular, being young, unemployed and educated increases incentives to consider moving abroad. The most important determinant of economic migration is the desire inherited in most humans to achieve a better material status [8]. Considering the job-seeking strategies and migrant motivations three types of higher educated EU migrants whose main motivation to move abroad is usually to pursue a successful career abroad were defined in the literature:

- *Drifters* seek any available employment.
- *Career seekers* focus on career advancement in their job search.
- *Target earners* take jobs that are easily accessible and best paid.

The difference between drifters and target earners is that the latter save for a future (investment) in the home country, while drifters have a variety of goals [24].

The economic migrants of post-communist countries have been seeking to build their professional life amidst collapsed labor markets and rampant unemployment rates, economic recession and austerity, sharply rising poverty

and inequalities, as well as restricted professional development opportunities. Some have chosen to emigrate taking their talents and expertise to other countries in search of better and more diverse opportunities and higher returns on their human capital investment [3]. This kind of migration is frequently identified with economic migrants, who are motivated by economic considerations and believe that they will succeed in covering the costs involved in the immigration process through their skills and talents [2]. Professionals, intellectuals, scientists and entrepreneurs (human capital) are more likely to emigrate under regimes curtailing individual and economic rights than unskilled laborers who are often less mobile internationally and face financial constraints to migration [11]. Migration from Eastern Europe is largely identified as an involuntary migration stream influenced by high unemployment, a high cost of living in relation to wages and a general lack of opportunities. However, although economic reasons are one important aspect of the decision to migrate, the overall picture is more complex and the rationale of migrating to the West is often not solely the establishment of upward social mobility. The abroad experience and a sense of cosmopolitan citizenship are often of equal importance [19].

The prospect of emigrating and acquiring higher wages abroad when being high skilled can stimulate people to achieve higher education levels. Hence, higher wage differentials between the home country (sending country) and the destination country should increase the highly qualified population's emigration rate [5]. The "brain drain" is the movement of talented (and often expensively trained) people from an impoverished society to a wealthier one. The developing countries are most likely to be negatively affected by the "brain drain" where the rapid loss of talented citizens in the developing societies is almost ludicrously unfair [28]. Conversely, the motivation of economic migrants to emigrate despite their qualification level was illustrated using a two-career example by Muller [22]. Assume that an individual can either train to be a highly qualified, or not get an education. The local wage for highly qualified person is w_Q and for uneducated is w_U, such that:

$$Y(w_Q) - C_Q > Y(w_U) - C_U \tag{1}$$

where $Y(w)$ is the net present value of the future income stream and C is similarly the net present cost of investing in the skills for a given career. Assume foreign country wages are three times higher across the board and designate them accordingly as:

- $w'_Q = 3 \times w_Q$.
- $w'_U = 3 \times w_U$.

Then the possibility of migration makes no difference to the decision to invest in becoming a highly qualified: it always makes sense to become a highly qualified if one can, regardless of whether migration is possible [22].

The loss of community sense is typical for economic migrants that seek their own better quality of life. The scheme of nation's communal relationship factors is shown in Figure 1. The sense of identifying with others, considering oneself part of the whole, being close, sharing a way of life, belonging and being bound up with others, and exhibiting solidarity with them, achieving the good of all, being sympathetic, advancing the common good, servicing and being committed to others' good become less actual for economic migrants. Personal income factor overtakes the combination of identity and communion solidarity [21].

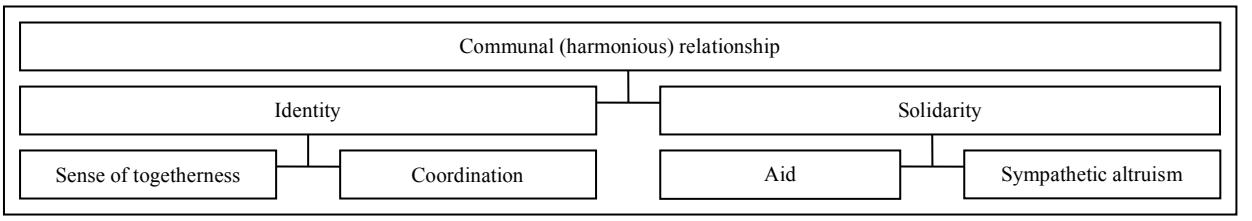


Fig. 1. Schematic representation of nation's communion (adopted from Metz [21])

Economically migration of labor force is the key component of the distribution of subjective productive forces. As such, it is closely linked to direct production [30]. Workers who respond to spatial disparities in labor market opportunities by moving in the direction of higher expected wages contribute to the equalization of productivity across regions. When wages do not adjust perfectly to regional shifts in supply and demand, the mobility of workers who are seeking to increase their employment probability contributes to restoring the balance in the regional labor markets [29]. In this way developed countries admitting immigrants solve the problem of regions' economic equalization while the developing countries losing population meet the growing inequalities in regions' economies. When receiving communities benefit from immigrant labor and human capital, sending communities can also take advantage of emigration in multiple ways [13]. An established body of literature in development, migration and transnational studies has provided evidence about the effects of emigration on communities of origin as well as the impact of remittances and migrant investments on development at the national and local level [1]. Diaspora communities can improve access to capital, knowledge and new technology, and play an important role for social development, growth opportunities, and connection between markets and countries [13].

The main positive financial effect of labor force exports for developing countries is remittances. A large body of research on migrant remittances has focused on their effects on consumption and poverty alleviation. However, these effects are likely to be short-term effects. Remittances also can have long-run effects on household welfare if such remittances lead to increased investment in human capital of recipient households [14]. Many proponents of remittances have shown that they help improve the recipients' standard of living, reduce poverty, encourage economic growth and development by enabling households to overcome liquidity constraints and invest in education and healthcare. Conversely, a number of studies point out the negative effects of remittances by arguing that remittances may discourage the supply of labor and reduce the recipient's incentive to work or increase current consumption, thereby promoting dependency of receiving countries [20]. Remittances are compensatory flows generating counter-cyclical behavior that enables transfer recipients to smooth their consumption and minimize its volatility, so remittances work as automatic output stabilizers [16] and solve the macroeconomic imbalances in the labor-exporting countries [6] where the export of labor ensures a revenue-generating development [7]. However, the emigration of highly skilled capital may not lead directly to an increase in remittances to the home country [23].

Despite the free movement of workers is a key right of EU citizenship, some obstacles to this mobility remain. The barriers are created by national differences in education, training, and qualifications [12]. The individual and group changes that occur through emigration mean that immigrants embark upon a period of adjustment to the new environment, two dimensions of which have been distinguished: sociocultural adjustment and psychological adjustment. Studies on European migration have shown that the immigrant population has more psychosocial problems and worse physical and mental health than the native population [9].

Immigrants from highly developed countries tend to naturalize in other countries when they became rooted through lifestyle and family ties, whereas immigrants from low or middle-development countries are much more strongly affected by economic factors [15]. As a result of many factors, however, it is becoming increasingly the case that many who migrated to developed countries are returning to their homelands for exactly the same reason they left, namely to search for a better life. The negative psychological and other costs of many immigrants, diminishing prospects of finding a decent job in many of the highly restrictive economies, rising social apathy towards immigrants and intensified protection of borders have all combined to prompt many immigrants in developed countries to consider pursuing their dreams of a better life in their countries of origin [25].

3. Research methodology

The empirical research aims to reveal the differences of Lithuanian economic development comparing them to other EU countries that currently are the most attractive for Lithuanian emigrants. The Lithuanian depopulation statistics and its future projections were presented. The differences between Lithuania and other EU countries as economic factors of international migration were measured by these indicators: GDP per capita, poverty risk thresholds (single person and two adults with two children under 14 years), mean and median income, compensation per hour worked, proportion of severely materially deprived people, people having income 130% of median or more, gross fixed capital formation (investments), exports, productivity per hour worked. The linear and logarithmic regression models were developed to estimate the current trends of economic indicators and to predict their possible

projections. The statistical rates of dynamics were used to analyze the changes of economic indicators. The hierarchical cluster analysis was implemented to classify the EU countries according to their economic development. The Euclidean distances were used as the measurements of economic differences. The official statistical information of Statistics Lithuania, EUROSTAT, and World Bank was used in this research.

4. Economic factors of Lithuanian inhabitants' emigration

The population of Lithuania in 1991–2017 decreased by 23.1% from 3.704 to 2.847 million inhabitants. It is one of the most significant population decline rate all over the world. In 2005–2016 the Lithuanian population decreased in average by 1.287% yearly. According to this indicator Lithuania was the first in EU and fourth in the world after Andorra (-1.850%), Northern Mariana Islands (-1,350%) and Georgia (-1.293%). The cumulative net emigration of Lithuanian inhabitants in 1990–2016 was 679 182 persons. To estimate the economic differences between the EU countries that influence the international migration flows the EU countries were classified into four clusters according to GDP per capita in 2016 (Table 1). Also the average month compensation per employee and average annual population growth rate were calculated for each cluster. The countries of Cluster 1 have mostly developed economies (GDP per capita is 179.5% of EU average), the compensation of employees is highest (140.7% of EU average), and the highest average population growth rate is typical for this cluster (+0.81% yearly). Conversely, the countries of Cluster 4 (including Lithuania) have the least developed economies (GDP per capita is 37.0% of EU average), the compensation of employees is only 34.4% of EU average, and these countries meet the problem of population decline (-0.7% yearly for this cluster). The correlation coefficient between average population growth rate and GDP per capita of EU countries is 0.77, and between compensation per employee is 0.75. So, it can be concluded that these economic indicators have the significant impact on population growth in the EU countries.

Table 1. Clusters of EU countries according to GDP per capita in 2016

Cluster	Countries	Average GDP per capita in 2016 (EUR)	Average month compensation per employee in 2016 (EUR)	Average population growth rate in 2006 – 2015 (%)
1	LU, IE, DK, SE, NL, AT, FI	52 243 (179.5%)*	4 193.49 (140.7%)*	+ 0,81
2	DE, BE, UK FR, IT, ES, MT	31 414 (108.0%)*	3 287.15 (110.3%)*	+ 0,51
3	CY, SI, PT, CZ, EL, EE, SK	17 514 (60.2%)*	1 685.66 (56.6%)*	+ 0,18
4	LT, LV, HU, HR, PL, RO, BG	10 771 (37.0%)*	1 026.16 (34.4%)*	– 0,70

* Percent of EU average

Figure 2 shows the GDP per capita linear long-term growth trends in Lithuania, EU (28), and countries of Cluster 1. The linear regression models were developed to forecast the potential GDP growth of these countries.

The average annual Lithuanian GDP per capita growth rate in 2007 – 2016 was 4.6%, while this indicator of the overall EU was only 1.2%. However, in 2007 the Lithuanian GDP per capita was 34.5% of EU average and in 2016 it increased to 46.4%. Considering this difference between GDP growth rates it is possible to predict when Lithuania could reach the average EU economic development level if the estimated linear trends remain the same. The equality of linear regression models (Figure 2a) is:

$$406.67x + 24\,513 = 537.58x + 7\,933.3;\ \{x = 127;\ year = 2133\} \quad (2)$$

The long-term projections modeling results indicate that Lithuanian GDP per capita could reach the EU average only in year 2133. The GDP per capita of Lithuania in 2016 was only 25.8% of Cluster's 1 average. The linear regression lines of Figure 2b visually show that the development of economy in Cluster 1 is more rapid than Lithuanian and these lines cannot intersect in future. So it can be concluded that it is almost impossible for Lithuania to reach the economic development level of seven mostly developed EU countries. The significant economic

differences cause the massive international migration of Lithuanian economic emigrants (Figure 3a). Since 1990 Lithuania loses in average 34 064 of emigrants every year while the average number of net emigrants is 25 155.

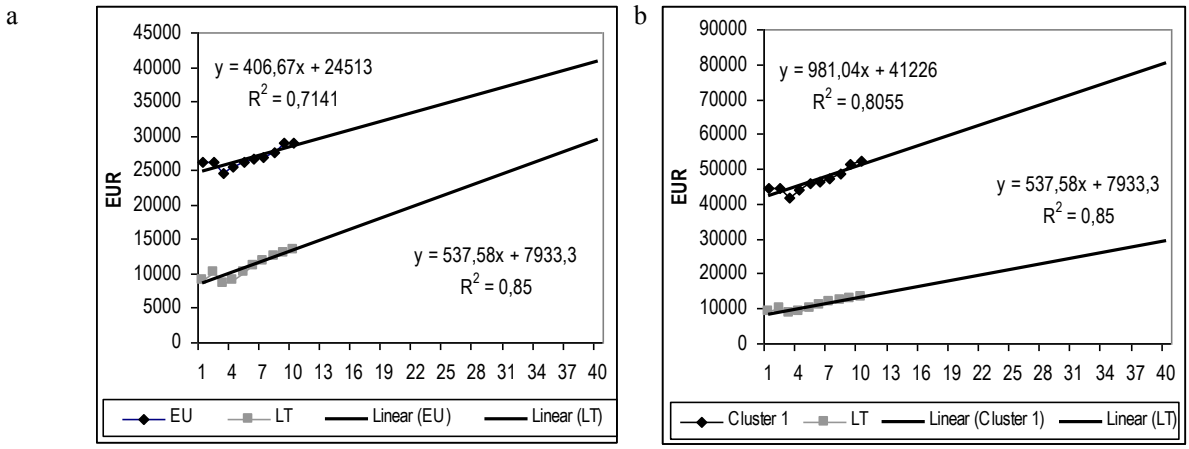


Fig. 2. GDP per capita linear growth trends: (a) Lithuania and EU; (b) Lithuania and Cluster 1 (*x* axis 1 = year 2007; 40 = year 2046)

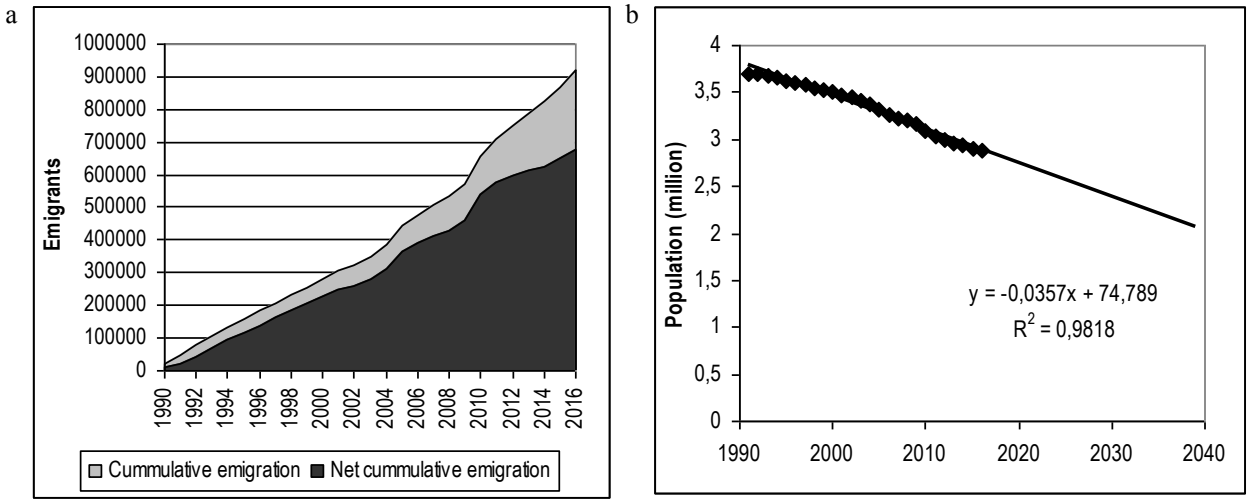


Fig. 3. (a) Lithuanian emigration statistics; (b) Lithuanian population forecasts

The logarithmic regression model was developed to predict the net cumulative emigration of Lithuanian inhabitants (million):

$$NET\ EMIGRATION_{LT} = 53.467 \cdot ln(YEAR) - 406.16 \quad (3)$$

The determination coefficient of net cumulative emigration prediction model is 0.9884. According to current continually growing trend it is very probable that in 2040 the number of formerly Lithuanian inhabitants that live in other countries will reach 1.296 million. The linear regression model of Figure 3b allows to predict, that in 2040 Lithuania will have only 1.961 million inhabitants. This number is lesser by 47.1% compared to year 1991. So, in period of 50 years Lithuania will have lost almost half of its population.

The dissatisfaction of Lithuanian inhabitants to living conditions in their country is related to low income and high poverty level. Lithuanian at risk of poverty threshold income per month (60% of median equivalence income) for single person in 2016 was only 282 EUR while the EU average was 719 EUR (Figure 4a). The Lithuanian indicator was only 39.2% of EU average and Lithuania was the 25th in the list of EU countries. The lower indicators were in Romania (122 EUR), Bulgaria (158 EUR), and Hungary (238 EUR). The highest poverty thresholds were in Luxembourg (1 693 EUR), Denmark (1 433 EUR), and Sweden (1 258 EUR). The Lithuanian poverty threshold for two adults with two children younger than 14 years in 2016 was 593 EUR per month while the EU average in this year was 1 509 EUR (Figure 4b). In Luxembourg this indicator was 3 555 EUR, in Denmark – 3 010 EUR, in Sweden – 2 642 EUR. That is 4.5–6 times higher than in Lithuania.

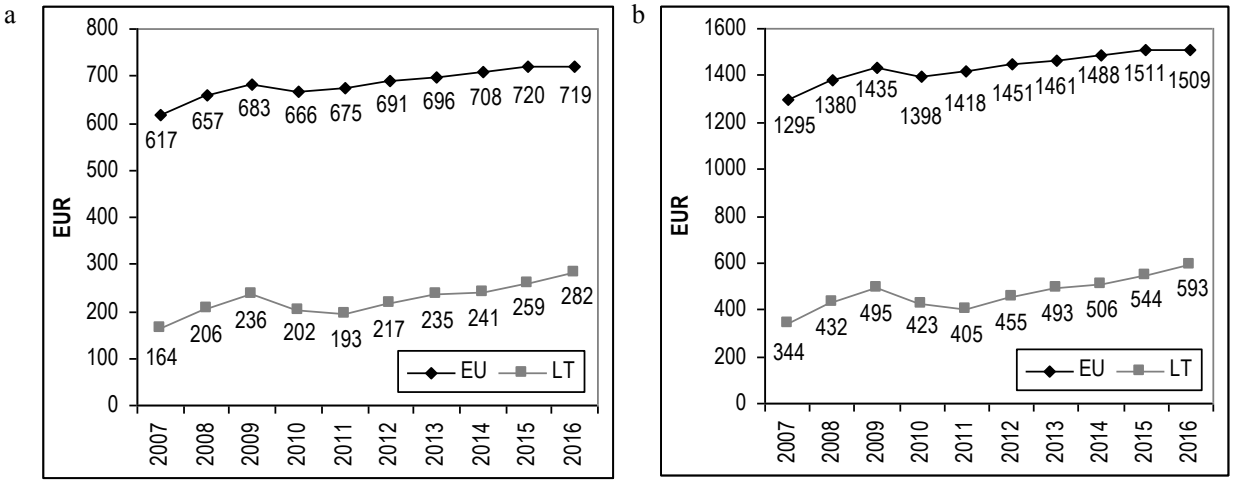
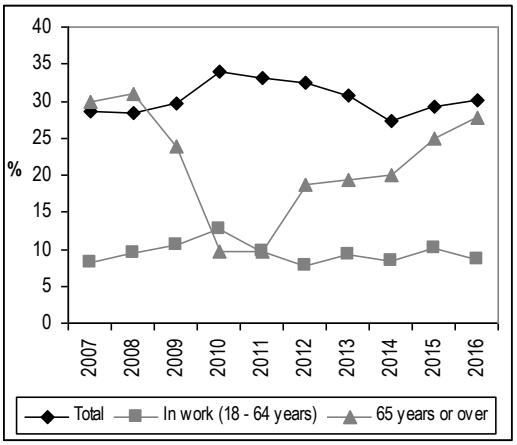


Fig. 4. At risk of poverty threshold income per month (a) Single person; (b) Two adults with two children younger than 14 years

Despite the very low poverty threshold in Lithuania compared to EU average, the proportion of inhabitants living below poverty threshold in Lithuania is significantly higher. The total average people living below poverty level in EU (2016) was 23.5% while in Lithuania this rate was 30.1%. In 2007–2016 this Lithuanian rate was in range of 27.3%–34.0% (Figure 5a). In the same period the proportion in work Lithuanian people living in poverty was in range of 7.7%–12.7%. The outstanding growth of poverty was observed in group of old-age people where the proportion of living in poverty increased from 9.7% (2011) to 27.7% (2016). The average old-age pension paid by Lithuanian State's Social Insurance Fund (SSIF) became below poverty threshold in 2015 and 2016 (Figure 5b). The total debt of SSIF in 2016 reached 3.89 billion EUR what indicates that this fund becomes unable to ensure the minimal living standards for elderly people under the circumstances of massive emigration of working-age people.

The economic migrants make the decision to change their country of residence considering the differences of economic development of countries. Lithuanian economic wealth indicators are significantly below the EU averages (Table 2). The mean income of one person in Lithuania is only 37.4%, median income – 34.2%, compensation per hour worked – 32.5% of EU average. The proportion of severely materially deprived people is higher by 6% that experience at least 4 out of 9 following deprivations items: cannot afford to pay rent or utility bills, keep home adequately warm, face unexpected expenses, eat meat, fish or a protein equivalent every second day, a week holiday away from home, a car, a washing machine, a color TV, or a telephone. Otherwise in Lithuania the proportion of people having income 130% of median or more is higher than EU average by 5.6%. That indicates the higher income inequality and lower social solidarity what is typical for lower-income countries.

a



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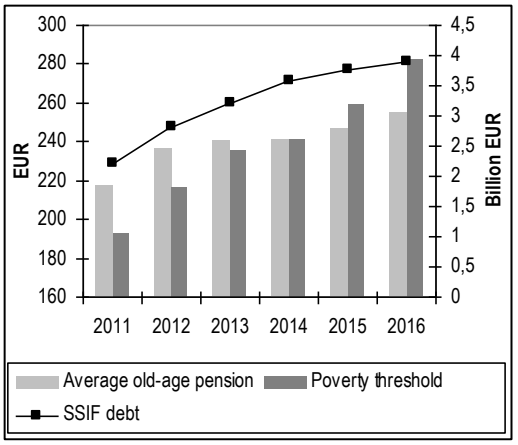

Fig. 5. (a) Lithuanian inhabitants living below poverty threshold; (b) Poverty threshold, average old-age pension, and SSIF debt

Table 2. Economic wealth indicators of Lithuania and EU in 2016

Indicator	Lithuania	EU average	Lithuania % of EU average	Lithuanian average annual growth rate in 2007 – 2016 (%)
Mean income (EUR/month)	586.08	1 567.08	37.4	+ 6.7
Median income (EUR/month)	470.42	1 375.92	34.2	+ 6.2
Compensation per hour worked (EUR)	7.4	22.8	32.5	+ 4.0
Severely materially deprived people (%)	13.5	7.5	+ 6.0	– 0.34
People having income 130% of median or more (%)	35.2	29.6	+ 5.6	+ 0.3

In period of 2007 – 2016 Lithuanian inhabitants' mean and median income grew in average by 6.2% – 6.7% yearly, the compensation per hour worked grew by 4% (Table 2). The proportion of severely materially deprived people declined by 0.34% every year, but the income inequality in this country also grows. The differences of mean income and compensation per hour worked between Lithuania and EU average of 2016 as datum-level are shown in Figure 6.

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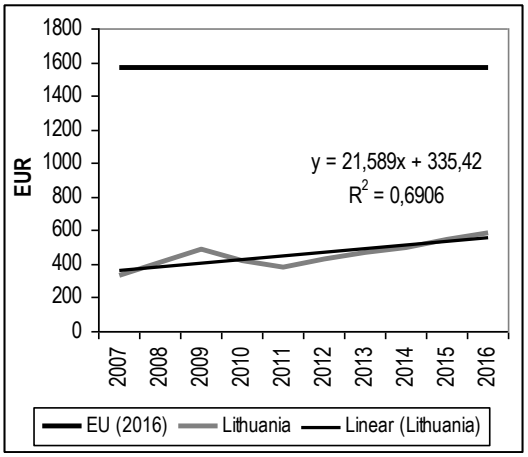

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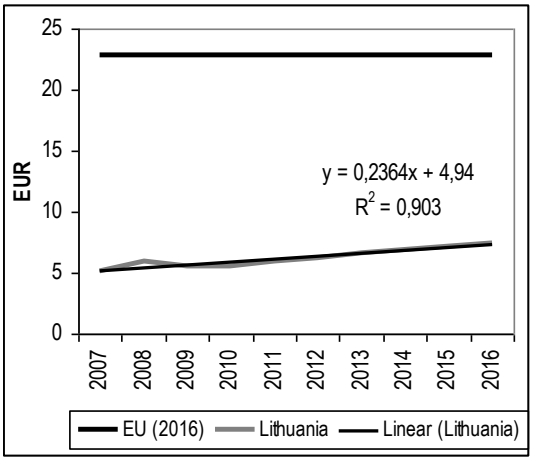

Fig. 6. (a) Mean income of 1 inhabitant per month; (b) Compensation per hour worked (datum-line is EU average in 2016)

Two linear regression models were developed to predict when Lithuania could reach the fixed levels of EU mean income and compensation per hour worked of year 2016. The Lithuanian mean income of 1 inhabitant per month prediction model (x = 1 is year 2007):

$$MEAN\ INCOME_{LT} = MEAN\ INCOME_{EU(2016)} = 1\ 567 = 21.589 \cdot x + 335.42;\ \{x = 57;\ year = 2063\} \quad (4)$$

The Lithuanian compensation per hour worked prediction model (x = 1 is year 2007):

$$COMPENSATION_{LT} = COMPENSATION_{EU(2016)} = 22.8 = 0.2364 \cdot x + 4.94;\ \{x = 76;\ year = 2082\} \quad (5)$$

The statistical linear regression modeling allows predict that Lithuanian mean income of 1 inhabitant per month will reach the current EU average of 2016 (1 567 EUR) in year 2063. The Lithuanian compensation per hour worked of employees will reach the current EU average of 2016 (22.8 EUR) in year 2082.

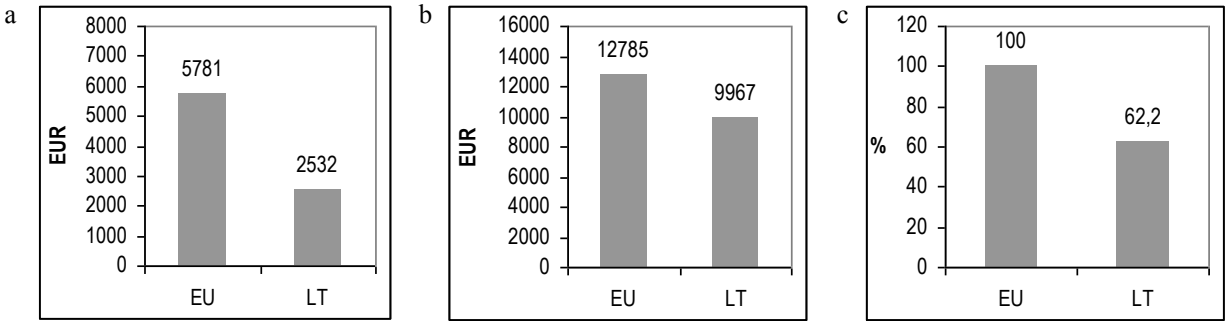

Fig. 7. (a) Investments per capita (2016); (b) Exports per capita (2016); (c) Productivity per hour (percentage of EU average in 2016)

The low Lithuanian economic wealth indicators are related to insufficient economic factors having impact on country's economic growth. The gross fixed capital formation (investments) per capita in 2016 was only 43.8% of EU average. This indicator for one Lithuania's inhabitant is lower by 3 249 EUR in a year (Figure 7a). Low investments do not allow to increase the production amount significantly that is related to GDP and population's income. Declining domestic market due to emigration and negative natural increment of Lithuanian population also slows the economic growth. For such economy exports of goods and services has the crucial importance, but this macroeconomic indicator is also lower than EU average (Figure 7b). The exports of Lithuania in 2016 was 78% of EU average level and in period of 2013–2016 it declined by 2.04%. Lithuanian nominal labor productivity per hour worked was only 62.2% of EU average (Figure 7c). This low productivity cannot allow have high GDP per capita due to disability to use the labor force efficiently in low-value-added economic activities.

Table 3. Regression modeling of Lithuanian economic indicators trends to reach the average values of Cluster 1 and Cluster 2 of year 2016

Indicator	Lithuania (2016)	Model	Cluster1 (2016)	Year	Cluster 2 (2016)	Year
Mean income (EUR/month)	586.08	y = 21.589 · x + 335.42	2 399.68	2102	1 857.74	2077
Compensation per hour worked (EUR)	7.4	y = 0.2364 · x + 4.94	33.3	2126	27.3	2101
Severely materially deprived people (%)	13.5	y = -0.2364 · x + 17.34	2.9	2067	5.7	2055
GDP per capita (EUR)	13 500	y = 537.58 · x + 7933.3	52 243	2088	31 414	2050
Investments per capita (EUR)	2 532	y = 30.443 · x + 1992.3	11 678	2324	6 718	2161

In the Table 3 five economic indicators (year 2016) of Lithuania, Cluster1 and Cluster 2 are given. Analyzing the statistical data of years 2007–2016 the linear regression models were developed to predict these Lithuanian indicators considering that current linear trend remains the same. The target values (y) of Cluster 1 and Cluster 2 were selected to find in what year Lithuanian economic indicators could reach the values that countries of Cluster 1 and Cluster 2 had in year 2016. Having the ambitions for Lithuania to reach the Cluster's 2 (DE, BE, UK FR, IT, ES, MT) average values according to current trends it is possible to have the mean income per month for 1 inhabitant 1 857.74 EUR in 2077, the compensation per hour worked could grow up to 27.3 EUR until 2101. The proportion of severely materially deprived people can be reduced to 5.7% in 2055, Lithuanian GDP per capita can reach 31 414 EUR in 2050. The investments per capita of 6 718 EUR in a year for Lithuania could be expected only in year 2161. The same analyzed economic indicators of Cluster 1 (LU, IE, DK, SE, NL, AT, FI) could be reached by Lithuania only in years 2067–2324 (Table 3) according to its current linear economic development trends.

The hierarchical cluster analysis was implemented to estimate the most similar and the most dissimilar EU countries to Lithuania according to 6 economic indicators: GDP per capita, investments per capita, nominal labor productivity per hour worked, mean income of 1 inhabitant, proportion of severely materially deprived people, and compensation per hour worked. The Euclidean distances were used as the measurement of countries' similarity or dissimilarity. The analysis results allow maintain that Lithuania is mostly similar to Latvia, Slovakia, Poland, Croatia, and Hungary where the Euclidean distances are in range of 967–2527. The most dissimilar EU countries to Lithuania are Luxembourg, Ireland, Denmark, Sweden, Netherlands, Austria, Finland, Germany, Belgium, United Kingdom, France, Italy, and Spain where Euclidean distances are in range of 13 971–84 776 (Figure 8a).

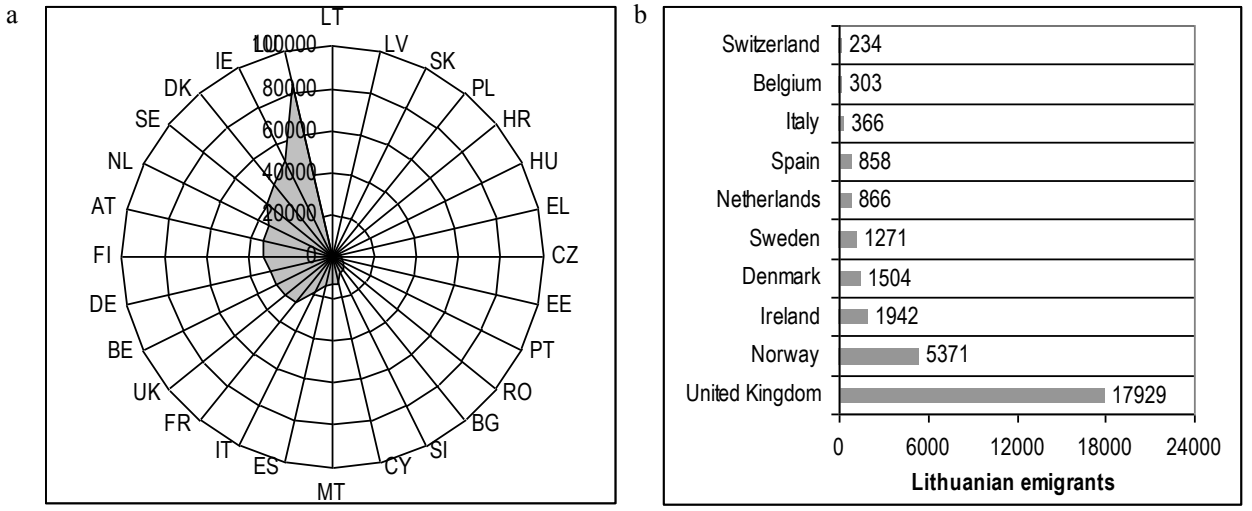

Fig. 8. (a) Euclidean distances between Lithuania and other EU countries; (b) The most frequent emigration countries of Lithuanian inhabitants

The emigration directions of Lithuanian inhabitants are highly related to the dissimilarities between Lithuania and other EU countries. The graph in Figure 8b shows 10 countries that are the most attractive for Lithuanian emigrants. The values of this graph indicate the average annual number of Lithuanian emigrants in 2011 – 2016. Eight of these countries selected by emigrants (except Norway and Switzerland) belong to EU. Four of them belong to Cluster 1 and the rest four belong to Cluster 2 of this research. The highest economic development of these countries undoubtedly attracts the economic migrants of Lithuania and it cannot be expected that migration flows can change if Lithuanian economy has such high differences compared to EU leaders. It can be concluded that current depopulation of Lithuania will continue and the official population projections of EUROSTAT that Lithuania in 2040 will have 2.129 million and in 2080 it will have only 1.658 million inhabitants are very real.

Conclusions

The research allowed quantitatively measure the differences between Lithuanian and other EU countries economies that are the most attractive for Lithuanian emigrants. These differences are so significant and the economic development of Lithuanian economy is too slow to reach the EU average values or especially the values of EU leaders. The further movement of Lithuanian inhabitants to more developed countries is inevitable shrinking the Lithuanian population and labor market. The regions, educational and social care systems of Lithuania will keep suffering from mass depopulation of the country. Undoubtedly the theoretical findings of this research can be affirmed that Lithuanian emigrants promote the economic equalization of distant regions in developed countries agreeing to work for wages that are lower than in large cities increasing their probabilities to find a job. However these wages are significantly higher than Lithuanian ones. Therefore the regions of Lithuania are inevitably influenced by this effect what slows their economic development and attractiveness to live. The Lithuanian labor force supply for other EU countries will continuously be typical for Lithuania as this phenomenon has acquired the chain effect: higher emigration slows the economic development what in this turn increases the emigration.

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Loan Portfolio Credit Risk: Country's Economic Factors of Debtors' Insolvency

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Abstract

This research aims to reveal the country's economic factors of loan portfolio credit risk in commercial banks and debtors' insolvency. The results of research allow foresee the possible problems of non-performing loans in banks of EU countries when the business cycle stage will change to recession. As in Lithuania the new credit boom period has started and Lithuanian central bank has set the additional counter-cyclical buffer of 1% for commercial banks in 2018, the possible forthcoming problems in credit market can be predicted. The statistical modeling of this research allows understand the impact of economic indicators on non-performing loans problem in commercial banks.

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Keywords: bank; credit risk; economics; loan portfolio; non-performing loans.

1. Introduction

Many countries of European Union (EU) as a consequence of past economic crisis of 2009 met the problem of high proportion of non-performing loans (NPLs) in commercial banks' loan portfolios. Lithuania was a country that also had the sudden significant growth of NPLs at that year. It is evident that the past deterioration of macroeconomic conditions influenced the credit risk of debtors in banks. As the credit cycle is highly related to

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business cycle, the end of previous credit boom period with reasonless high immovable property prices as well as high indebtedness of inhabitants also caused the disadvantageous scenario of economic changes. Since 2014 the demand for credits in Lithuanian credit market is growing what indicates the new possible credit boom period. Especially the growing demand for immovable property loans under the circumstances of rapid depopulation of Lithuania warns about the bubble effect in the real estate market. With the necessity Bank of Lithuania decided to require the additional 1% counter-cyclical capital buffer from commercial banks in 2018. If the boom period continues in further years the central bank can require increase this buffer subsequently. This regulatory instrument reduces the credit supply in boom period, increases the price of credits and smoothes the credit cycle fluctuations in period of economic recession.

The aim of this research is to analyze the impact of country's economic factors on loan portfolio credit risk in commercial banks. The tasks of this research are: theoretically present the impact of economic factors on loan portfolio credit risk in banks analyzing the scientific publications; to analyze the Lithuanian economic changes and commercial banks' indicators; to compare the economic conditions and banks' loan portfolio indicators in other EU countries highlighting the main patterns of their interdependencies. The methods of this research consist of scientific literature analysis and statistical analysis of EU countries' official statistics data.

2. Literature review

During the last decade lots of scientific articles and studies were written about business cycle's influence on commercial banks' credit risk of the certain countries or areas, like European Union or Eurozone. In many cases these articles were initiated by 2009 global financial crisis, looking and proving possible causes of it and finding a range of different security measures that could help to minimize or at least partly control loan portfolio credit risk during different stages of business cycle: economic growth or even recession.

Anastasiou, Louri and Tsionas [1] found that in 1990–2015 commercial banks NPLs were significantly and strongly influenced by variety of macro variables and output gap, so these variables should be taken into account not only formulating country's macro-prudential and fiscal policies, but also managing credit risk in banks. The study of Vithessonthi and Tongurai [18] found positive impact of financial development on banking stability by increasing banks' capital and herewith showed that financial development gives rise to banking fragility in terms of greater revenue diversification and problem of NPLs especially when experiencing economic recession after growth period.

One of the most important indicators in banking sector, that defines price gap between borrowed and lent money, and also makes the significant part of RoE is the interest spread which is also affected by business cycle. Based on study of Aydemir and Guloglu [2] credit risk has a more significant impact during booms, when interest spread minimizes, comparing to other risks, for example liquidity risk, which has a more significant impact on spreads during recessions, when interest spread passes from very high to medium, because of that among bank specific factors, capital turns out to be the only significant variable in the estimations. According to Okimoto and Takaoka [14], internal data accumulated in commercial bank's low risk portfolio and its dynamics can be used to forecast economic or business cycle changes. The spread of the A-rated credits has useful information for predicting the business cycle changes because it is qualitatively similar to government bonds. As the low risk portfolios have very low probability of default, when it slowly changes it is the sign than minimum margin of risk in the whole economy is changing and economic or business cycle stage is about to shift [14]. Because of the relationship between loan portfolio credit risk and various economic indicators, the future economics or business stage can be determined by present credit constrains – looser credit conditions initially generate increasing business cycle volatility and stronger co-movement between private debt and real economic activity. These non-monotonic relationships are intertwined with the credit constraints and the higher credit limits. While this pattern implies that a simple cap on the average loan-to-value (LTV) ratio may increase macroeconomic volatility, scientific study of Jensen, Ravn and Santoro [8] shows that a tightened counter-cyclical LTV ratio dampens volatility and reduces the risk of large output drops.

Also, it must be mentioned that different types of loans portfolios for example, household and business loans, and their credit risk are differently affected by particular business stage and its indicators. The most distinct difference is in the response of the real exchange rate, which responds positively to an expansion in household and tradable sector credit, and negatively to an expansion in non-tradable sector credit. These responses explain the large differences observed in the data correlation of the real exchange rate with different credit types. Study of Bahadir and Gumus

[3] also generates a strong positive correlation of output with household credit, whereas for the some types of business credit the correlations are weaker. The strength of the co-movement of output and different types of credit depends on a two-way interaction: while output responds to credit shocks, output fluctuations also affect credit dynamics. Study shows that all credit shocks have a positive effect on output of similar magnitudes whereas output fluctuations are more important for household credit than tradable and non-tradable sector credit. Output dynamics have a stronger effect on household credit due to the structure of the credit constraints and the relative importance of productivity shocks in determining the stochastic processes for the credit limits [3].

In study based on the Credit Portfolio View (CPV) model, by assuming that improved macroeconomic conditions will reduce credit risk, the macroeconomic variables with possible impact on credit risk were identified and an econometric model was established. The research has shown that increase in the ISE index leads to decline in banks' credit risk. The growth of money supply, exchange rate, unemployment rate, inflation rate, and interest rate, on the other hand, increases banks' credit risk. An increase in the interest rate and unemployment rate in the previous periods leads to the growth of banks' credit risks in future. Also considering the interrelation between the differences of economic activity, the previous period's credit risk has a significant impact on the current period's risk level [20]. Several studies have concluded that the macroeconomic environment has a strong influence on banking credit risk and it mainly increases when GDP, the share price indices and the housing prices decline as well as when the unemployment rate, interest rate, and credit amount increase. Moreover, the significant credit risk growth in banks was observed during the recent financial crisis period [4].

As a few scientific articles impose, the main problem of hardly controlled loan portfolio credit risk grows even in economic development periods. It is based by unmatched credit and business cycles fluctuations. In recent study of Marcucci and Quagliariello [13] it was found that the impact of the business cycle on banks' clients risk growth is significant not only during economic slowdowns but also when economy grows. Lots of less-risky and riskier clients are significantly affected by the over-optimism in business cycle growth period estimating their possibilities to repay debts, but the negative impact is stronger for the latter ones. In particular, the increase in the default rates as a result of following decrease in the output gap is higher for riskier debtors.

Also, the possibility to assess credit risk is affected by how much or how few commercial banks know their clients and can predict various clients' decisions at economic recession periods. The research [6] empirically proved that, depending on the health of the economy, the benefits of bank-firm relationships might take the form of a weaker credit spread for new applicants. A strong bank-firm relationship results in a lower spread for new loan applications during the high phase of the business cycle. As a result, during an economic downturn, the stronger is the bank-firm relationship, the higher is the interest rate. In such bad economic conditions, firms are locked in and reluctant to quit their bank, while banks can extract some rents. It highlights the prominent role played by the business cycle in understanding the link between bank-firm relationships and the cost-risk of credit [6].

There are some theories that suggest loan portfolio credit and other risks management based by general economic conditions, i.e. macroeconomic variables and their fluctuations. In this way fixing the price of credits in banks is based obeying the macro-prudential policy. The theory is based on rational learning that leads to revisions of banking skills to analyze the environment in which bank performs, making decisions depending on a macro state that could be shaped by investor sentiments or developments in the real sector. The sufficiently long sequence of favorable outcomes for banks leads all agents – banks themselves, their investors, and regulators – to assign relatively high probabilities to the abilities of banks to manage their own risks properly. This provides banks to offer the access to low-cost funding, and encourages banks to engage in riskier lending. Consequently, if agents can directly observe that outcomes are just due to luck or observation of aggregate defaults leads to such an inference, there is a sharp increase in the risk premia on risky assets. Under some conditions, a crisis occurs as debt investors withdraw their funding from banks and banks apply restricted credit policies [17].

Scientific research of Karfakis [9] partly proved that link between negative changes in general economics and credit risk growth is significantly stronger at developing economies comparing them to already developed economies. For example, this scientific article presented empirical evidence about the relationship between credit and future movements in real output at business-cycle fluctuations in Greece. The analysis indicated that the credit-output link is significant, robust and temporally stable, implying that the measure of aggregate claims on the private

sector is a useful indicator which provides information about future movements in real output, independently of the trade deficit ratio. Failure to acknowledge this empirical fact could give rise to undesirable economic consequences. In other words, the credit collapse during the eruption of the Greek debt crisis seems to be one of the forces which are responsible for the collapse of the whole economy. An economic recovery requires a positive credit shock which will support aggregate demand and real output [9].

One of the most frequent sign of enlarged credit risk is abnormal loan growth in the commercial bank sector or in separate bank. The differences in bank systemic risk can be explained by the one-period-lagged value of abnormal loan growth. Differently phrased, higher abnormal loan growth increases bank systemic, especially credit risk, one year forward [15]. So, trying to prevent abnormal future credit risk levels market regulator should control money supply using different set of instruments. One of the possible tools for this, especially in developing economies, is information sharing. The impact of credit information sharing on bank credit risk appeared to be high in low income countries that had no such registries before. The credit information sharing reduces the possibility to obtain credit for applicants that have negative credit history which is the very important specific risk indicator [11].

The economic environment of business enterprises and households has a significant and robust association with non-performing loans to total loans (NPLs) and loans loss reserves to total loans (LLR) in commercial banks. In economic terms this effect is considerable. However, to build a complex precise artificial system that using statistics and general rules can evaluate how general economic dynamics will affect different loan portfolios is almost impossible because of many different and dynamic independent variables, so the main risk evaluation job and decisions to grant or not a credit often is left for credit committees. Mostly the growth of NPLs is strongly associated with the credit boom-bust pattern before and after the outburst of the Global Financial Crisis. The incorporation of macroeconomic variables into the credit risk assessment enables to decline the portfolio risk by the particular proportion compared to the risk assessment analyzing only loan applicants' specific indicators [12].

The amount of experienced credit risk also can change from drastic economic politics changes. The research of Chi and Li [5] proves that economic policy uncertainty (EPU) can increase non-performing loan ratio, the single biggest customer loan ratio and the normal loan migration rate, and adversely affect the loan sizes of commercial banks by shocking enterprises' demand and banks' supply of credit resources. When faced with an increase in EPU, banks can improve performance by reducing loan sizes. Marketization levels and financial development depth can also be used to reduce the negative effects of EPU on commercial banks [5].

As there are lots of economic indicators that in one or another way correlate with different credit risk measurements and can help evaluate present or future credit risk level or event prevent it from reaching critical levels, the most popular are various forms of inflation measurement indicators [19], GDP growth speed and amount of national income [7], various country's or regional employment indicators [10], house and other immovable property price indices [16] and lots of others. Banks performing in the particular countries or regions as well as other interested parties that are seeking to manage credit risk should develop their own unique credit risk assessment models considering the particular economic indicators. That is determined by the differences in countries' economic and business cycles, regulatory systems, financial, social, political, economic peculiarities, internal policies of financial institutions, etc. All these models can be different at the same time and varying in different countries.

3. Research methodology

The aim of empirical research is to reveal the economic factors that have impact on loan portfolio credit risk in commercial banks. The proportion of non-performing loans (NPLs) was selected as the portfolio risk measure. Firstly, the situation in Lithuanian commercial banks was presented in the context of country's economic indicators. Secondly, the dynamics and structure of Lithuanian banks loan portfolio were presented and the relative banks' loan portfolio indicators were analyzed to estimate the risk of new credit boom in Lithuania. Thirdly, the economic factors of growing demand in Lithuanian credit market were analyzed together with the possible forthcoming consequences of credit boom period. Fourthly, the NPLs problem of Lithuanian banks' was compared to other EU countries and the impact of gross domestic product (GDP) indicators on it was measured. Finally, the classification rules were developed to foresee the seriousness of NPLs problem in EU countries when the development of economies will change the direction into the recession stage. The polynomial and exponential regression methods together with the descriptive statistics indicators were applied to solve the mentioned tasks of this research. The

statistical data from Statistics Lithuania, Bank of Lithuania, EUROSTAT, and World Bank was used in the statistical analysis process.

4. Economic factors of debtors' insolvency in commercial banks

The current business cycle of Lithuanian economy changed the direction in 2010 when the recent economic growth stage started. The year of last recession was 2009 when the GDP per capita decreased by 16.7% compared to year 2008. During this economic recession the proportion of non-performing loans in Lithuanian commercial banks reached 24% (Figure 1a). This percentage was the highest in overall EU. Further the growing Lithuanian economy continuously reduced the proportion of non-performing loans to 3.7% in 2016, when the country's GDP per capita reached 13 500 EUR. Compared to year 2009 this economic indicator in 2016 was higher by 58.8%.

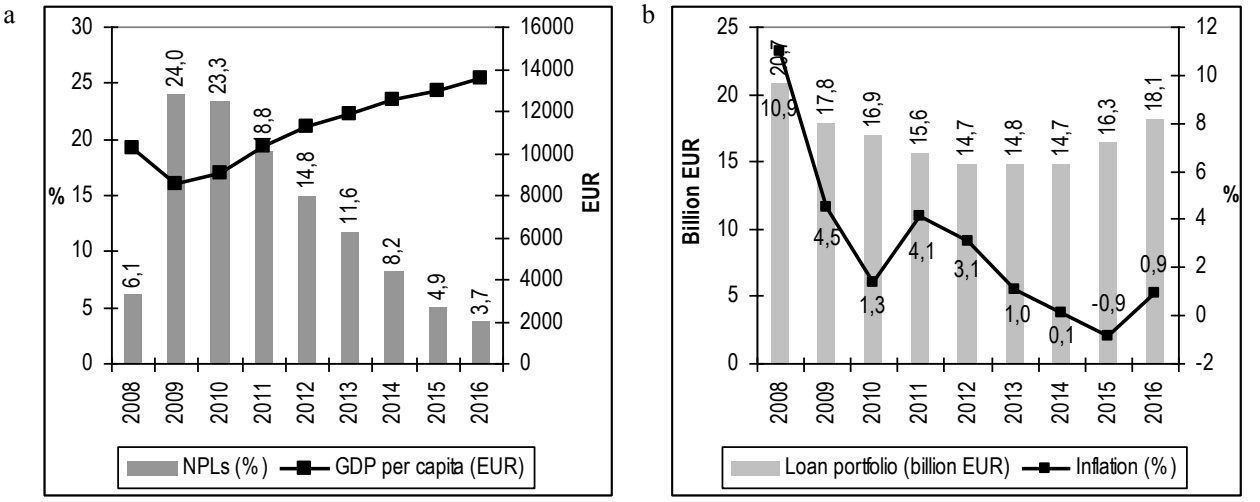


Fig. 1. (a) Non-performing loans in Lithuanian banks and country's GDP per capita; (b) Loan portfolio in Lithuanian banks and country's inflation rate

The highest Lithuanian GDP per capita in pre-crisis period was in 2008 when this indicator reached 10 200 EUR. It was the last peak point of Lithuanian economy having the total GDP at market prices of 32.7 billion EUR. At this economic peak-point the total loan portfolio of commercial banks in Lithuania was 20.7 billion EUR or 63.3% of GDP. Also, year 2008 was the end of Lithuanian credit boom period when the inflation rate reached 10.9% (Figure 1b). After that the economic deterioration caused the decline of banks' loan portfolio until 2012 when banks implemented restricted credit policies due to high proportion of insolvent debtors and loss-making activity. The highest consolidated net loss of Lithuanian banks was also during economic recession in 2009 where the total net loss was 1 072.6 million EUR (Table 1). The inflation of Lithuania suddenly fell to 1.3% in 2010, after 1 year it grew to 4,1% but then it continuously decreased until 2015 when the deflation of -0,9% was in Lithuanian economy (Figure 1b). In after-crisis period the loan portfolio of Lithuanian commercial banks started to grow in 2015 when the proportion of non-performing loans decreased to 4.9%. Three years before (2012–2014) it was quite stable (14.7–14.8 billion EUR). In 2016 the loan portfolio reached 18.1 billion EUR and it was 87.4% of 2008 year's amount.

Since 2011 the activity of Lithuanian commercial banks is profitable. The average net profit of a year in 2011–2016 was 245.3 million EUR. The total assets of banks in 2016 almost reached the 2008 year's level (Table 1).

In peak-point of Lithuanian economy (year 2008) the commercial banks' loan portfolio to GDP was 63,3% and loan portfolio to total assets in consolidated banks' balance-sheet was 79.6% (Table 2).

Table 1. Total assets and net profit of Lithuanian commercial banks in 2007–2016 (million EUR)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total assets	23 456.4	25 993.2	24 397.5	23 663.9	22 878.1	21 815.0	22 468.2	24 129.8	23 436.8	25 754.4
Net profit	370.0	233.9	-1 072.6	-70.3	356.1	207.1	227.5	213.4	215.3	252.2

The after-crisis economic growth period influenced the increase of loan portfolio to GDP to 46.7% and this portfolio was 70.2% of banks' total assets in 2016. So, it can be concluded that first mentioned indicator can grow by 16.6%, the second can grow by 9.4 until they achieve the values of previous credit boom peak in 2008. Considering the Lithuanian economic development scenario presented by Ministry of Finance of the Republic of Lithuania, the 3.5% of inflation rate was predicted in this document for the end of year 2017. This growth of inflation, GDP and banks' loan portfolio warns about possible beginning of new credit boom period in Lithuanian economy.

Table 2. Relative loan portfolio indicators of Lithuanian commercial banks in 2008–2016 (%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Loan portfolio to GDP	63.3	66.2	60.3	49.9	44.1	42.3	40.3	43.7	46.7
Loan portfolio (% of total assets)	79.6	73.1	71.4	68.3	67.5	65.8	61.1	69.7	70.2

At the peak point of credit boom period in 2008 the Lithuanian commercial banks had 10.8 billion EUR of business loans and 8.3 billion EUR of households loans in their portfolios. After the loan portfolio decline and in the new growth period in 2016 Lithuanian banks had 8.6 billion EUR of business loans and 8.1 billion EUR of households loans (Figure 2a). Compared to 2008 the business loans in 2016 reached 79.6% and households loans 97.3% of credit amounts in previous credit boom peak-point. The immovable property loans in 2008 were 6.0 billion EUR while in 2016 they reached 6.4 billion EUR (Figure 2b), so this type of credits already has exceeded the 2008 year's level by 6.6%. The exaggerated demand for immovable property using borrowed money influenced its price growth. In 2016 the immovable property prices grew by 9.1% and this growth was the highest in whole after-crisis period. The consequences of economic recession in 2009 suddenly reduced the immovable property prices by 34.6%.

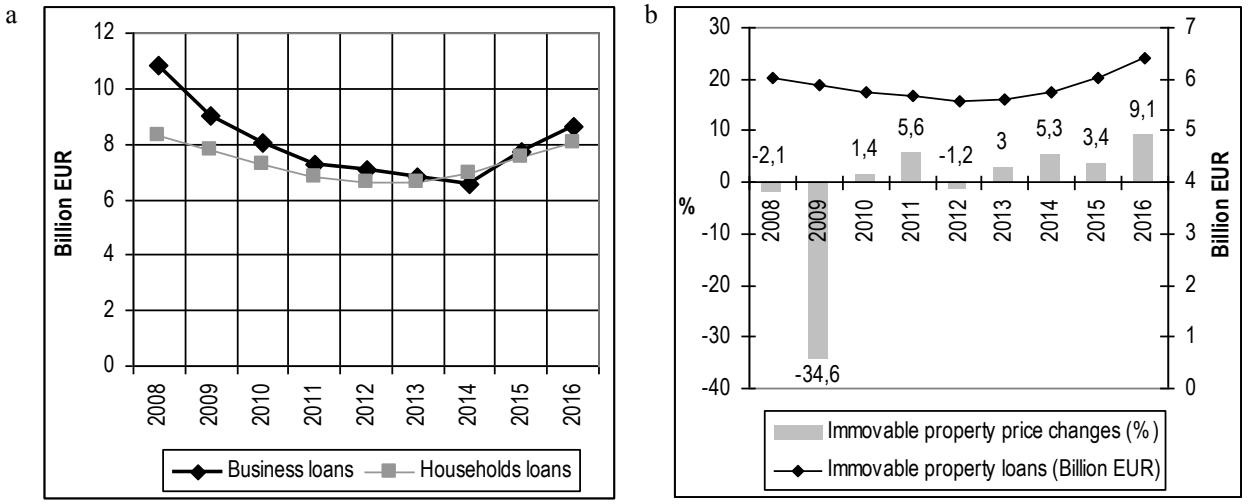


Fig. 2. (a) Business and households loans in Lithuanian banks; (b) Immovable property price changes and loans

Due to this negative change of value many debtors were unable to fulfill the obligations for banks when they lost personal income in economic crisis and could not sell the immovable property for prices that this property was bought. This situation is typical for every after-boom period in real estate markets, so the similar changes can be expected when the current immovable property credit boom will come to the end.

The changes of Lithuanian banks' loan portfolio structure in 2008–2016 are given in the Table 3. The proportion of households loans in this period increased by 4.6%, while the proportion of business loans decreased by the same 4.6%. The households' credit activity becomes higher than business what indicates the possible new boom period.

Table 3. Structure of loan portfolio in Lithuanian commercial banks in 2008–2016 (%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Business loans	52.3	50.5	47.7	46.4	47.9	46.2	44.3	47.3	47.7
Households loans	40.0	43.8	42.9	43.6	44.9	44.7	47.1	46.1	44.6
Other loans	7.7	5.7	9.4	10.0	7.2	9.1	8.6	6.5	7.7

It is evident that economic expectations for the future of households are more optimistic rather than business prospects. The gross fixed capital formation (investments) in 2005–2008 increased by 73.3% and reached the maximal value of 8.5 billion EUR. In recent economic growth period of 2010–2016 investments increased only by 54.8% to 7.3 billion EUR (Figure 3a). It should be noted that business investments in 2016 stopped growing, but the optimism of Lithuanian households was under the influence of growing wages. In 2013–2016 the households loan portfolio in Lithuanian commercial banks increased by 22.7% to 8.1 billion EUR (Figure 2a). At the same period, the compensation of employees per hour worked increased by 12.1%, whereas the productivity per hour worked of Lithuanian employees increased only by 2.3% (Figure 3b). So, the growth of wages stimulates the growth of inflation which is the indicator of credit boom and reduces the purchasing power of consumers leading to further economic recession.

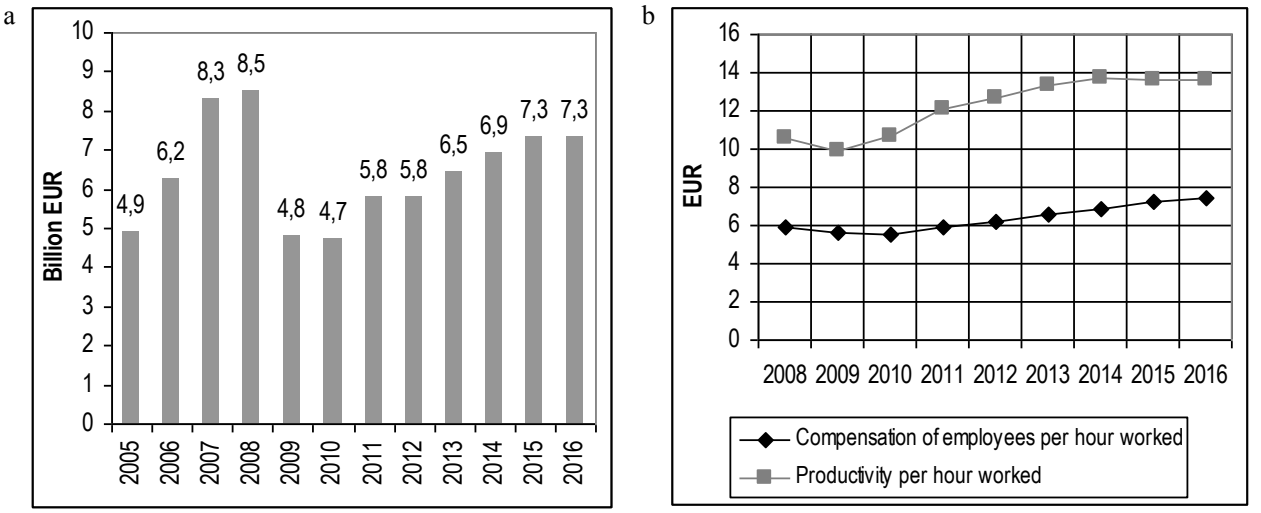


Fig. 3. (a) Gross fixed capital formation (investments) of Lithuania; (b) Productivity and compensation of Lithuanian employees

The risk of increase of non-performing loans in banks' immovable property loans portfolio when economic recession in business cycle occurs is related to mass emigration of Lithuanian inhabitants what reduces the demand to the immovable property. In 1991–2017 Lithuania has lost 23.1% of its population and this process continues. Until the beginning of year 2017 more than 679.2 thousand inhabitants emigrated from Lithuania (Table 4). The

remittances of emigrants significantly increase the expenditures in domestic markets of Lithuania. The highest remittances were received in 2011–2014 when the previous credit boom consequences were reduced in households by cash inflows from abroad. Currently, the remittances in 2016 were the least in whole post-crisis period.

Table 4. Lithuanian emigrants and their remittances in 2008–2016

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cumulative net emigration (thousand persons)	428.1	460.1	538.0	576.2	597.5	614.3	626.6	649.0	679.2
Remittances of a year (billion USD)	1.565	1.239	1.673	1.954	1.508	2.060	2.113	1.372	1.280

Comparing the proportion of non-performing loans in Lithuanian banks to the situation in other EU countries it can be seen that in 2009 the worst situation was in Lithuania (24%). However, analyzing the period of 2009–2016 the higher NPLs were in Cyprus (48.7% in 2016), Greece (36.6% in 2015) and Ireland (25.7% in 2013). In Figure 4 the highest NPLs of every EU country in 2009–2016 are given together with the number of year that was the worst for banks of that country. Visually in Figure 4 the EU countries were divided into two groups: high NPLs [9%; 48.7%] (black columns) and low NPLs [0.6%; 6%] (grey columns).

In Figure 5 the average GDP per capita values of the EU countries in period of 2009–2016 are given in the same countries' order as in Figure 4.

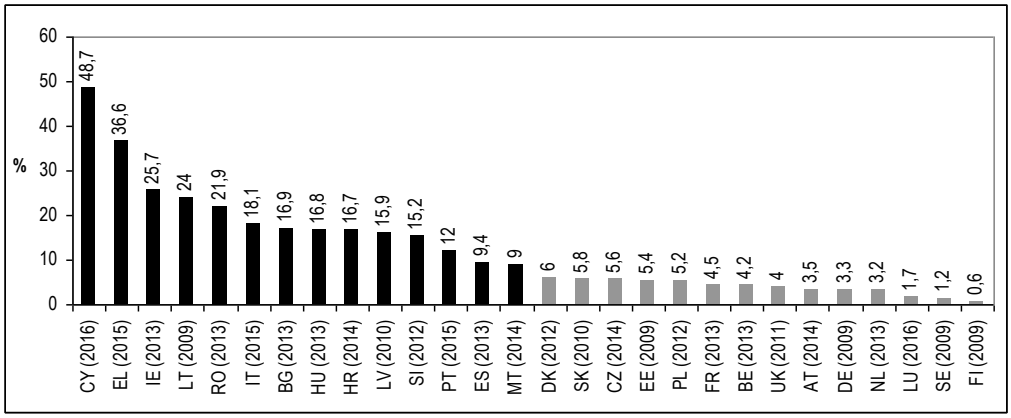


Fig. 4. The highest proportions of non-performing loans in EU countries' banks in period of 2009–2016

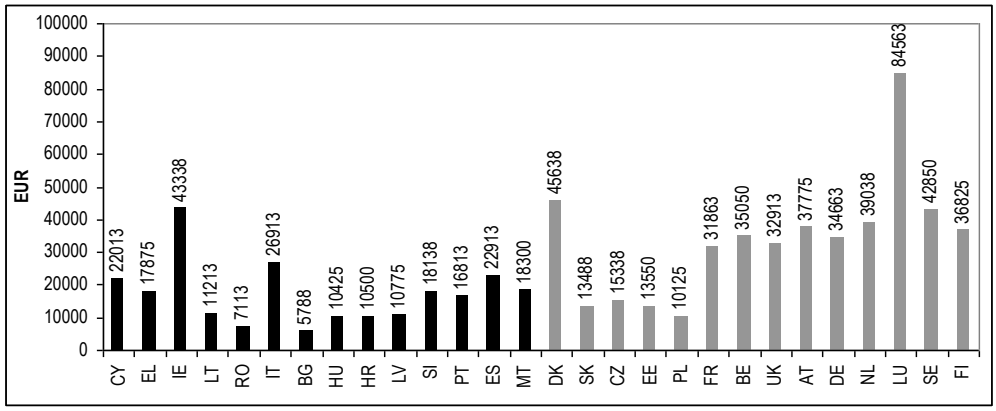


Fig. 5. The average GDP per capita of EU countries in period of 2009–2016

It can be seen that the relatively higher GDP values are typical for countries with low NPLs, and vice versa. The exceptions are Ireland and Italy in high NPLs group, as well as Slovakia, Czech Republic, Estonia and Poland in low NPLs group (Figure 5). In further analysis Italy will be included into the high NPLs group's indicators because this country does not reach the minimal value of GDP per capita in low NPLs group without exceptions.

The average GDP per capita of the whole EU (28) in 2009 – 2016 was 26 913 EUR. The median of NPLs in EU (28) at the same period was 7.5%. Excluding the exceptions the minimal and maximal values of GDP per capita were divided by the EU average in high and low NPLs groups (Table 5). Also the probabilities were calculated to be classified of EU countries into these groups according to these criterions.

Table 5. Relative GDP per capita values in high and low NPLs groups of EU countries

High NPLs group			Low NPLs group		
Min / EU average (%)	Max / EU average (%)	Probability (%)	Min / EU average (%)	Max / EU average (%)	Probability (%)
21.5	100,0	76.5	118.4	314.2	90.9

According to the revealed consistent patterns the estimation process scheme of probabilities of EU countries to have low or high NPLs in banking sector (P) during economic downturn was developed in Figure 6. The classification threshold was set as 1.092 of EU average GDP per capita ($GDP_{EU\ (28)}$) calculating the middle point between maximal to EU average value in high NPLs group and minimal to EU average value in low NPLs group. The EU countries can be classified into these groups with 76.5% and 90.9% probabilities.

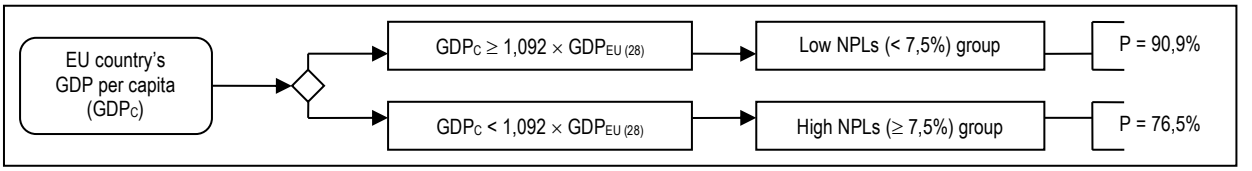
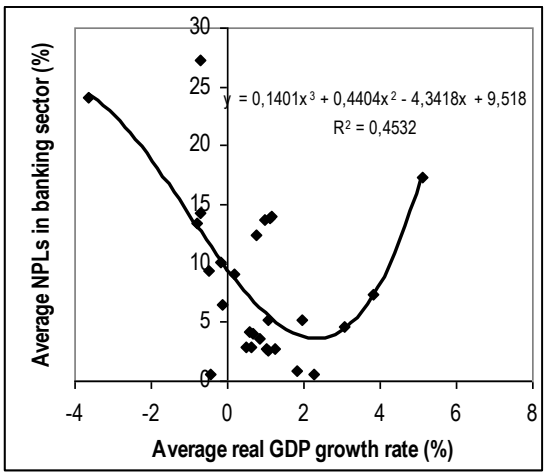


Fig. 6. The probabilities of EU countries to have low or high NPLs in banking sector during economic downturn

To visualize the interdependences between non-performing loans in banks and countries' GDP two statistical models (polynomial and exponential regression) were developed analyzing the statistical data of years 2009 – 2016 in Figure 7.

a



b

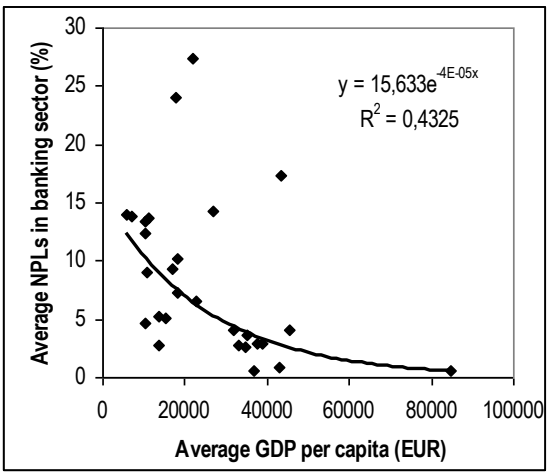


Fig. 7. (a) NPLs and average real GDP growth rates of EU countries; (b) NPLs and average GDP per capita of EU countries

Increasing the average real GDP growth rates reduce the NPLs in banks, except the last point of Ireland in Figure 7a, that was considered as an exception in previous analysis and had high GDP growth rate (25.6%) in 2015 and high NPLs. Also growing the GDP per capita is the factor of lower NPLs in banks (Figure 7b). Four points highly above the exponential regression curve can be also considered as exceptions.

Almost all EU countries (except Poland) in period of 2009 – 2016 suffered from GDP downturns in their economies (from -14.8% in Lithuania (2009) to -2.3% in Belgium (2009)), so the statistical data analysis of this period allowed reveal the impact of countries' economies on NPLs in commercial banks. Using this information it is possible to foresee the magnitude of NPLs problems in banks when the economics of EU countries will turn into recession stage again in future.

Conclusions

The statistical data analysis has shown that Lithuania in 2009 had the highest proportion of NPLs in banks compared to other EU countries. The GDP decline in this year was also the highest in Lithuania. The activity of commercial banks became loss-making, they restricted the credit policy what slowed the economic growth in post-crisis period. The current (2015–2016) growth of banks' loan portfolio, together with growing GDP, inflation, immovable property prices, wages and non-growing productivity also warns about possible beginning of new credit boom in Lithuania.

In the research process the EU countries were divided into high and low NPLs groups, thereby Lithuania belongs to group where the macroeconomic indicators are low and NPLs problems in banking sector were high in last economic recession. These patterns allow maintain that Lithuanian banks perform in more risky environment and their loan portfolio quality can deteriorate significantly if the country's macroeconomic conditions become worse. The banks of countries in low NPLs group can expect less debtors' insolvency problems under the similar economic conditions.

Expecting the credit boom period and reducing its possible negative effects the policy of Lithuanian central bank to increase the counter-cyclical buffer of banks by 1% in 2018 is very rational. This regulatory instrument allows expect that consequences of current credit boom period in future can be not such destructive for Lithuanian economy as they were in 2009.

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The Impact of Resources Meeting VRIN Criteria on the Economic Performance of Enterprises

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Abstract

The resource-based view in strategic management is currently of great interest to both scientists and practitioners of economic life. The resource-based view focuses on enterprise internal attributes as important factors that affect its competitive position. The literature of the subject emphasizes insufficient empirical research justifying the theoretical foundation of the discussed approach. The main aim of the article is to indicate to what extent the resources owned by the company affect their economic performance. The company's resources are considered in accordance with the VRIN model proposed by Barney ie. valuable, rare, inimitable, not substitutable. In order to achieve the objective, theoretical framework of resources according to the resource-based view was first outlined. The focus was on the main assumptions of the resource –based view and detailed characteristics of resources attributes. An essential part of this research is a regression analysis of the stock base of companies and their economic performance. The analysis was carry out based on the survey conducted on a sample of 55 companies listed on the WSE and NC markets in Warsaw.

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Keywords: resource-based view, asset, economic performance, resources attributes, VRIN framework.

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1. Introduction

Resource based view (RBV) in the literature of the subject is obviously linked to strategic management but is also present in the theory of economics. In the literature of strategic management RBV focuses on explaining how enterprise's resources affect its competitive advantage. On the other hand, in economic theories there were established the concept of resource and the process of its allocation. On theoretical basis, resource based view has been already well embedded in the literature, and even new trends are visible that are initiated on its basis. However, the main objection to resource based view is the small number of empirical studies, that would strengthen the theoretical core. The literature of the subject includes the empirical research on resources, but they mostly refer to the resource bundle (eg. strategic, non-material, dynamic capabilities) and do not focus on the whole of enterprise resource base. There are individual studies focusing on the attempt to define what Barney's resource attributes mean [1], on combining VRIN resources with dynamic capabilities and their effect on the economic performance [2] or finally typical studies on resources meeting VRIN category [3–5]. The obvious deficiency of research is an incentive for the author's exploration of the subject of enterprise resource profile in the area of resource based view. The main purpose of this paper is to present research on the effect of enterprise resources meeting VRIN criteria on its economic performance.

The remainder of this paper has the following organization. Section 2 presents theoretical background and develops related hypothesis. Section 3 outlines the methodology and data samples of researches. Section 4 presents conclusions.

2. Resource-based view and economic performance

2.1. Resources and their attributes

In the neoclassical theory, resources are understood as factors of production, divided into three categories, ie. capital, labor, and land [6]. However the development of science extended the state of knowledge on enterprise resources. They became an object of interest for numerous modern theories, both economic and management, describing ever more complicated processes running inside the enterprise and in its environment. First definitions perceived enterprise resources as everything that the enterprise possesses and may use for its operation. JB. Barney [7] defines resources in a quite wide way, as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness". In other words, the enterprise resource base includes all means in its disposal, that are used to create value [8]. Currently resources can be understood as anything that contributes to the realization of the enterprise objectives, regardless the form of existence, sources of origin, or ownership relations [9]. The above definition of resources clearly emphasize, that they do not have to be owned by the enterprise, but be available through eg. lease, license, franchise, or even a form of strategic alliance with another business unit. Presented approach to resources is related to the category of flexibility and allows to build enterprise resource profile. Thus, it is not an objective itself to posses as many resources as possible or to posses resources of better quality, but such configuration of resources that enables the realization of enterprise strategy. The literature of the subject also emphasizes that the possession of resources itself does not create value for the enterprise [10] and does not decide the competitive advantage [7]. Only their use, combination and joining allows for a synergy effect which should be reflected in enterprise economic performance.

Each resource is distinguished by certain ontic features, such as: usability, functionality, uniqueness, flexibility, universality, productivity [11]. Resource features are as numerous as their classifications. This paper focuses on those attributes that are directly related to resource theory of strategic management. The most recognized VRIN model for resource features, created by Barney [7] and then modified by him into VRIO model [12] focuses on four key attributes of resources. The concept of valuable, rare, inimitable and non-substitutable (in modified version the letter N was replaced by the letter O standing for an organization that exploits its resources and capabilities) is nowadays probably known to everyone. Valuable resources are meant to adapt the enterprise to ever changing environment conditions and allow for its efficient operation. The rarity of resources proves their unique character that creates a gap between the resource owner and its competitor. Two following resource features: difficulty in

imitation and substitution, are inseparably linked and create a kind of 'isolating mechanisms' that keeps the competition at bay. The enterprise resource profile configured based on the above features allows for its development, resulting in the economic performance and competitive position. The resource profile was described differently by Peteraf [13]. The author claims that the winning of stable competitive advantage requires the resources to meet four criteria, ie. immobility, heterogeneity, ex post limit and ex ante limit. The most important, necessary and even essential condition is the heterogeneity of resources, based on which the enterprise may generate a differentia profit. The other three criteria must also be met. Resource immobility means they cannot be sold. This condition may be mitigated a bit into imperfectly mobile resources. That means the resources can be sold, but they will not be as beneficial for the competitor as for the current owner. In institutional economy terms imperfectly mobile resources are related to transaction costs that significantly exceed the value of purchase. However, in order to keep the competitive advantage it is necessary to create barriers / limits for the rivals, both ex post, to prevent the rents from being competed away and ex ante, to keep costs from offsetting the rents.

2.2. Economic performance

The problem of measuring economic performance in works on RBV studies in most cases is the description of variable choice in empirical research. The literature of the subject clearly emphasizes that resources meeting VRIN criteria should lead to a stable competitive advantage. However, empirical research does not necessarily measure competitive advantage but rather economic performance. It is worth citing here the studies on scientific papers by Newbert [14] and Crook et al. [15] in the area of RBV main principles. Newbert [14] notes that in the majority of studies (93% of 55 articles) the dependent variable reflects performance and only 16% refers to competitive advantage. Also the meta-analysis of 125 published papers conducted by Crook et al. [15] did not recognize the "competitive advantage" determinant and only referred to "performance". As it was rightly pointed out by Armstrong and Shimizu [16], "RBV essentially explains and predicts the relationships between the particular resources of a firm (independent variables) and sustainable competitive advantage reflected by performance-related outcomes (dependent variable)".

There are two possible reasons for such an approach. First of all the quantification of resources meeting VRIN criteria itself causes many problems. How do you determine which resource is valuable or rare? The explanation of the term "valuable" was attempted by Bowman and Ambrosini [1]. The authors indicate three ways of perceiving the resource value: usage value (perception of the value by the customer), monetary value (the amount the customer is willing to pay) and exchange value (the amount that was actually paid). Based on this it is possible to attempt to estimate the value of valuable resource. But how to value the other resource attributes? Thus it is a difficult task to obtain a reliable picture of enterprise resources. Secondly, the competitiveness is a concept that includes many elements. Processes occurring on the markets as well as changes in the environment of enterprises and in the enterprises themselves, mean that winning competitive advantage some years ago required the use of different methods and instruments than in current market conditions [17]. How to measure competitiveness then? The methods of competitiveness measurements are divided into two groups. The traditional approach to the competitiveness measuring focused on the use of the financial analysis, while the current trend is application of a wide range of indicators from various areas of the company which are subject matter of both the quantitative and the qualitative methods [18]. The assessment of enterprise competitiveness can be made using one of the following approaches [19]:

- narrower approach, including market share and financial strength reflected in the profitability of a given business unit;
- wider approach, focused on the enterprise competitiveness potential and the external conditions.

The wide approach to market competitiveness measurement relates to enterprise competitiveness potential, understood as market share and sales profitability, as well as to external conditions, including relations with the environment and the intensity of the use of soft sources. Such approach to competitiveness measurement is difficult to estimate due to the existence of a broad set of variables that are significant to the competitive position won by the enterprise [17].

Maintaining a stable competitive advantage brings about such difficulties that the majority of studies on RBV do not even try to measure that area, using economic performance instead [20]. Thus it is not surprising that difficulties in the estimation of independent variables cause that the choice of dependent variable is made in a way that ensures the reliability of the measurement, therefore using economic performance.

2.3. Hypothesis

The above theoretical considerations as well as the research objective correspond with the hypothesis formulated by the author that reads as follow:

H: there is a statistically significant relation between the variable reflecting enterprise economic performance and its resource profile.

3. Methodology of research

3.1. Data sample and method

The main scientific objective of this paper is to analyze the effect of enterprise resources meeting VRIN category on the economic performance of that enterprise. For this purpose a survey on VRIN attributes in resources possessed by the enterprise was conducted. The survey was conducted in April 2015, using the method of computer-assisted telephone interviewing (CATI) and computer-assisted web interviewing (CAWI). The research covered companies from various industries, listed on the main market of the Warsaw Stock Exchange and the New Connect in Warsaw. The full research sample included 63 companies, while due to incomplete data the sample was reduced to 55 companies to this research. Financial data necessary to illustrate economic performance was taken from the financial reports of companies and from data made available in Notoria OnLine. The studies initiated in this paper are the first, preliminary analysis on the effect of enterprise resource profile on the value of its economic performance.

Verification of the hypothesis was conducted using the method of mass dependencies correlation analysis (regression analysis), which indicates whether there are dependencies between analyzed variables and simultaneously shows the strength and direction of those dependencies. The regression model parameters were estimated using Classical Least Squares Method.

The return on assets (ROA) ratio was selected as the variable illustrating enterprise economic effect. This ratio is the best reflection of the profitability of the enterprise assets. The enterprise resource profile was determined using resources meeting VRIN criteria. Resource features that constituted independent variables were: R_V – valuable resources, R_R – rare resources, R_I – inimitable resources, R_N – non-substitutable resources, R_O – other resources. Companies determined their resource profile by giving the percentage share of individual features of resources. Regression analysis was used to evaluate the dependencies among the above variables. Table 1 resumes the descriptive statistics for the variables used in the study.

The data presented in the Table 1 indicates that there are enterprises which resources do not have VRIN attributes, as well as enterprises that possesses only valuable resources, or surprisingly only inimitable resources (financial industry companies). Over half of enterprises possess resources that are valuable in over 40%, and 25% of analyzed companies declare that they have over 60% of such resources. In the case of rare and inimitable resources, in 75% of analyzed companies the share of such resources in total resources does not exceed 30%. When analyzing maximum values it should be noticed that there are enterprises with a high share of rare resources (80%) and non-substitutable resources (60%). In most cases companies were able to determine the features of their resources. A small number of analyzed companies decided that their resources do not meet VRIN categories and in most cases those were companies from the industries based on extensive use of fixed assets, such as machinery, devices, buildings. When analyzing ROA ratio it is worth noticing that the research covered companies of both positive and negative value of the ratio. Also over half of companies recorded the ROA value of over 2.6%, but not exceeding 15.63%. At the same time ¼ of analyzed companies demonstrated high negative values of that ratio.

Table 1. Descriptive statistics

	R_V	R_R	R_I	R_N	R_O	ROA
Median	40	20	20	10	0	2.6
Q1	20	10	10	0	0	-1.54
Q3	60	30	30	20	5	5.92
Minimum	0	0	0	0	0	-59.91
Maximum	100	80	100	60	100	15.73
Std. Error	3.56	2.04	2.78	1.85	1.90	2.02
Std. Dev.	26.42	15.11	20.62	13.70	14.11	14.98
Sample variance	697.80	228.20	425.05	187.77	198.96	224.27
Kurtosis	0.06	3.63	5.96	2.12	40.35	7.12
Skewness	0.50	1.16	2.11	1.41	6.00	-2.47

3.2. Results

Dependency between ROA ratio and the enterprise resource profile indicates that all independent variables in the model as well as the absolute term have a significance of $p<0.0001$. The correct estimation of regression model parameters is also evidenced by the value of p test F, which is less than 0.01. Developed model is therefore statistically significant. However, the values of correlation coefficient (0.34) as well as of coefficient of determination (0.59) indicate that there is no strong linear dependence between analyzed variables. Coefficients facing each variable proves the positive direction of dependencies between those resource features and assets profitability (Table 2–3).

Table 2. Results of the regression model for ROA dependent variable

	Coefficient	Std. Error	Student's t	p-value	
const	−59.1231	0.123352	−479.3026	<0.0001	***
R_V	0.654063	0.0270277	24.1998	<0.0001	***
R_R	0.537926	0.0686961	7.8305	<0.0001	***
R_I	0.503318	0.0603855	8.3351	<0.0001	***
R_N	0.555818	0.128033	4.3412	<0.0001	***
R_O	0.725756	0.0330585	21.9537	<0.0001	***

Table 3. Regression statistics

Regression statistics	
Multiple R	0.58809
R square	0.345849
Matched R square	0.279099
Standard error	12.71509
Std. Dev. of a dependent variable	14.97552
F(5, 49)	436.4966
The p-value for the F test	2.23e-39

4. Conclusions

4.1. Findings

Conducted empirical research on ROA ratio illustrating enterprise economic performance and its resource profile indicates that there are dependencies between analyzed features, on average level of significance. The research proves the positive direction of relationships between enterprise resource profile determined by features of resources meeting VRIN criteria and the economic performance reflected by ROA ratio. The developed model is statistically significant, but it is difficult to determine a resource profile on its basis.

4.2. Limitations and future research directions

It seems reasonable to start more detailed research, taking into account the limitations that emerged on this stage. The main difficulty in this research was to conduct a survey at the top management level. While it was quite clearly explained in the survey how to understand the individual resource features, the lack of time for responses by people employed at top and exposed positions did not allow to collect a larger research sample. Presented outcomes may be a result of other factors which prevented the conduction of more precise research. Companies selected for the research demonstrated both positive and negative ROA ratio. It seems reasonable to conduct a future study on only those companies that recorded above-average values of assets profitability ratio and use companies with low or negative ROA ratio as a control sample. ROA ratio in this research sample resulted above zero for 70% and below zero for 30% of companies. Therefore it was decided not to divide the sample into two additional parts. Also it should be considered, whether the research on the effect of enterprise resource profile on its economic performance should be conducted on sectoral basis, as each of the sectors is characterized by different use of individual resources.

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Development, Transition and Challenges of Economics as a Science

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Abstract

This paper provides an insight in formation and development of economics as a science. The paper determines the role of economics among other fields of study, its definition and the core content. Purpose of this paper is to map economics among other sciences and to recognize transition of economics from moral science to mathematical science and the following challenges of the field. The analysis reveals that relatively new and expanding branches of economics, such as behavioural economics and empirical economics, are forming as a response to historical changes in the field towards simplified assumptions necessary for mathematical modelling in the mainstream economics. The present study provides added value by structuring information and defining tendencies in the field.

Keywords: history of economic thought, economics as science, behavioural economics, empirical economics.

1. Introduction

Issues embedded with economic matter have been of interest long ago, and economics has been discovered and considered as a separate field of science already for several centuries. As it has been said "the first discovery of science is the discovery of itself" [1]. Surely, until today economics as a science has changed in scope, approaches used, and issues covered. And changes of the field are ongoing.

Current literature covers analysis of different matters of economics as a science. To deepen analysis on each issue they mostly are investigated separately. To contribute to the existing body of research this study proposes to apply more general approach and investigate the research problem: "How economics has changed as science during time regarding inclusion of philosophical / ethical / psychological context on the one hand and mathematical insights on the other hand?" Thus, this contextual article aims to add value by summing up the existing knowledge, recognizing

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general tendencies and analysing fundamental changes in the field. The purpose is to enlighten fundamental ground of the rise of the new and expanding branches of economics – behavioural and empirical economics.

The approach of the present article is "from general to particular". At first, what is economics in context of other sciences is investigated (Section 2). After that a historical insight into the development of mainstream economics is given, describing the development of economics originating in moral philosophy until classical and neoclassical economic thought (Section 3). Further, the transition of economics is discussed, analyzing the historical shift from the rather soft field that is concerned with moral issues to a harder field that stands value-free and is highly equipped with mathematical techniques (Section 4). Next the article discusses the following challenges of mainstream economics, as a great deal of reasoning and mathematical modelling in mainstream economics is based on simplified assumptions about perfectly rational economic agents, but the empirical evidence contradicts this underlying assumption. As a result of those challenges and incompleteness of the mainstream theories and to fully explain the economic phenomena, the rise of behavioural and empirical economics is discussed (Section 5).

In the presented context the rise of behavioural economics, an interdisciplinary field strongly linked with psychology, and empirical economics, a field presenting significant methodological shift towards observations of actual economic behaviour seems consequential.

It is important to note that the study does not intend to cover all history of economic thought in detail. Stages of development and personalities mentioned are limited to subjectively chosen turning points that can be a matter of discussion themselves.

At the end of each section concluding remarks summarizing the most important issues covered in section are included. In the general conclusion (Section 6) overall tendencies are summarized, and the section is ended with potential fundamental issues for further discussion.

2. What is economics?

2.1. The origin of term "economics"

The term "economics" is believed to be originated in the Latin word "***oeconomia***", which is derived from the Greek word "***οἰκονομία (oikonomía)***" meaning "household management" and "state management" [2]. Thus, the initial meaning of the term "economics" in Ancient Greece was associated, firstly, with managerial activities one does at his home and, secondly, in a wider scope – how a state is managed. The oldest recognized usage of the term "economics" is believed to be by Greek philosophers Aristotle and Xenophon more than 300 years B.C. [3–4]. Regardless of the ancient Greek origins of the term, economics was not an important field of study for them since economics as a separate science had not formed yet. Although ancient Greek philosophers have made some references to economic matters, they were more interested in more general fields of philosophy and ethics. Economics as a science formed many centuries later – together with the rise of the classical economic thought starting from the middle of the 18th century. At that time the term "political economy" was used. But during the next two centuries, along with the change in economic thought, the term used to describe economics as a separate science changed from "political economy" to "economics".

2.2. Position of economics among other sciences

There are many ways how branches of sciences can be classified. To reveal the position of economics among other sciences three ways of classification will be presented.

One common but rather formal way to classify the information about the work in science has been developed by the Organisation for Economic Co-operation and Development (OECD). OECD has presented Revised Field of Science and Technology (FOS) classification or Frascati Manual 2007 [5] with the aim to achieve a minimum level of comparability of research and development data at the international level. According to their classification there are six main groups of sciences and economics allied with business are included in the list of social sciences (Fig. 1).

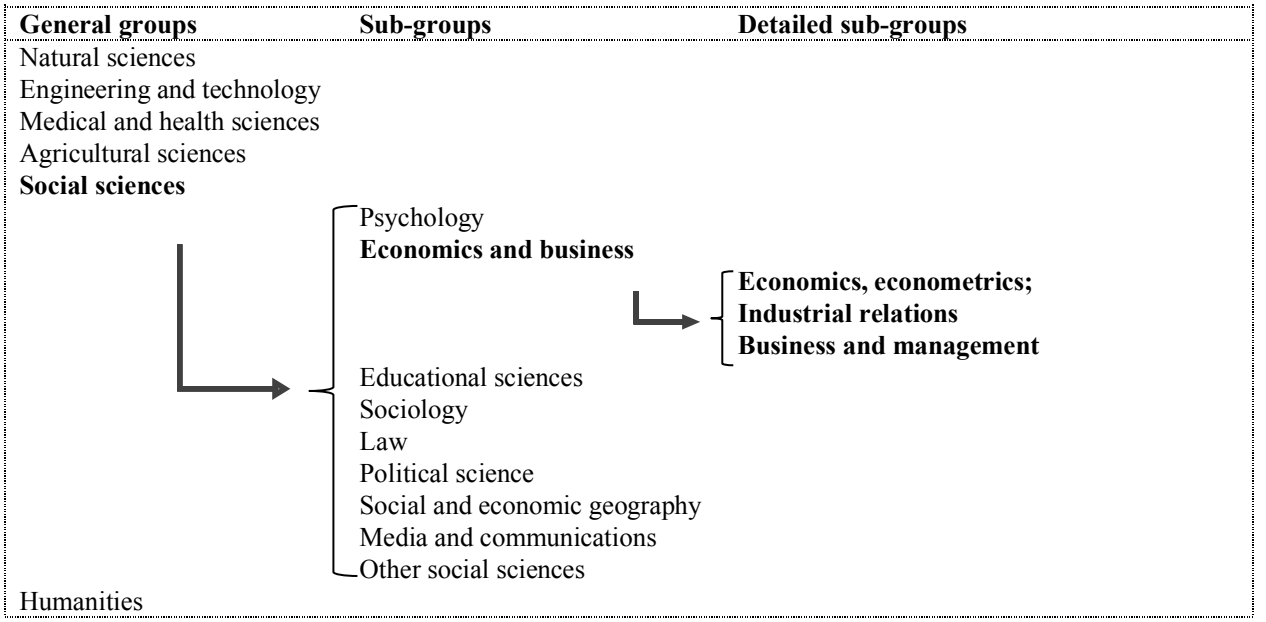

Fig. 1. Position of economics among other sciences according to the OECD Frascati Manual 2007 classification [5]

Another way of classifying branches of science is based on the level of the scale of the universe that is the object of investigation in every field of science. Based on this classification economics is a science of humans and is positioned as one of the social sciences (Fig. 2).

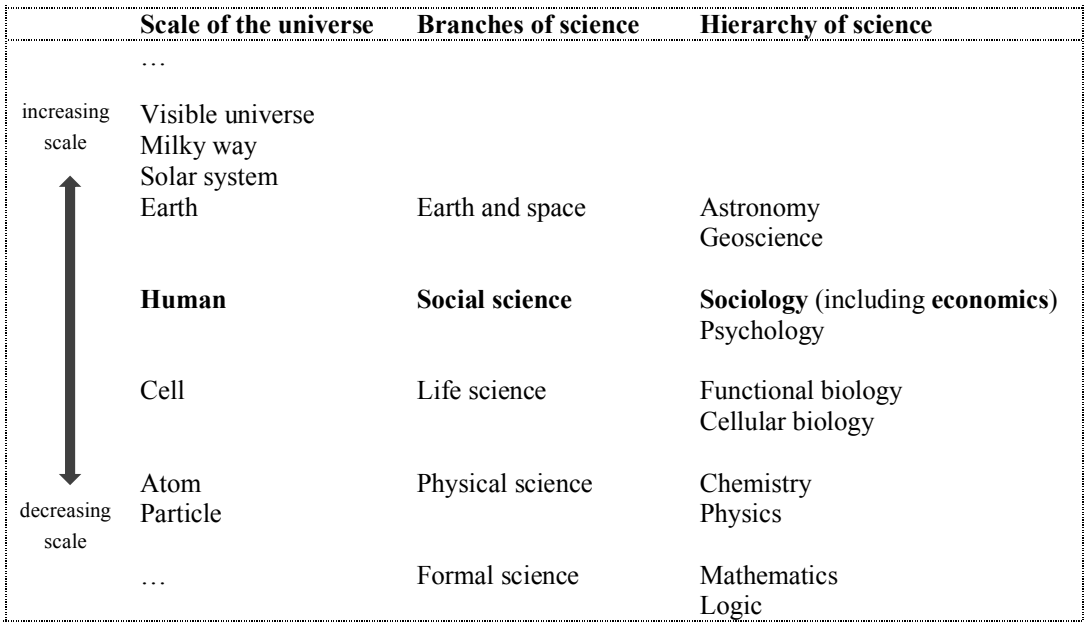

Fig. 2. Branches and hierarchy of science mapped to the scale of the universe (based on the classification from [6])

By examining these and other ways [7] how science can be classified and by analysing the inner logic of different principles of categorising, the subjectively most essential ideas are summarised and illustrated in Figure 3.

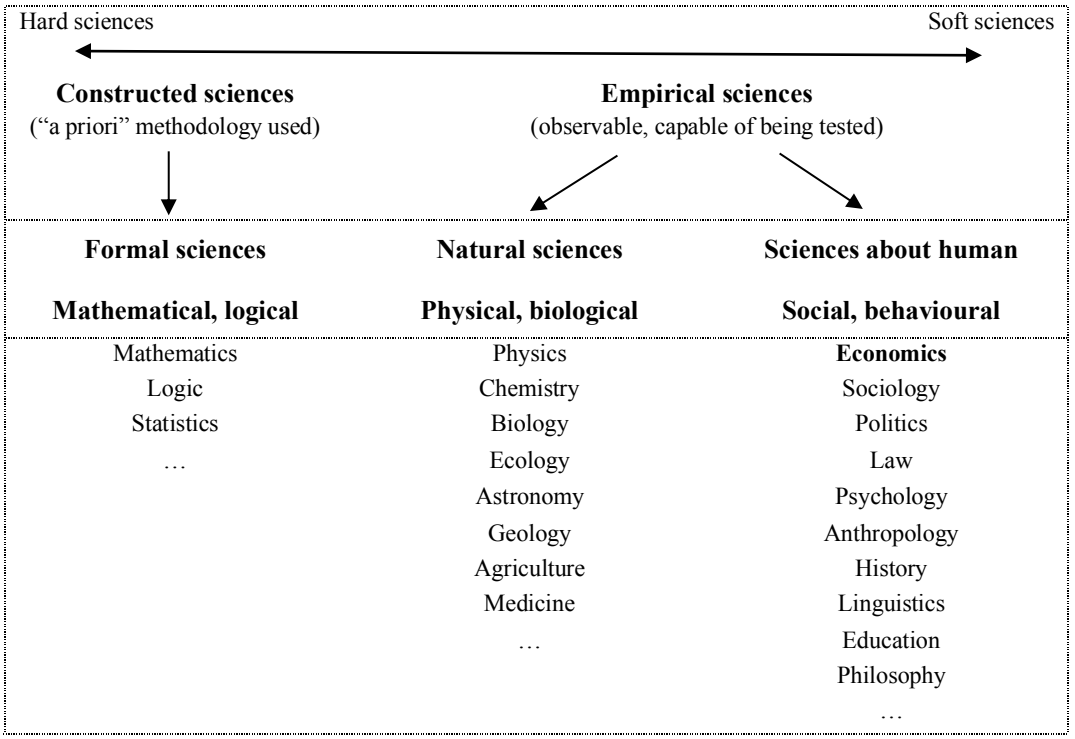

Fig. 3. Classification of branches of science (self-made summary)

When analysing classification of branches of science presented in Figure 3, it is important to make several notes. Firstly, there are no strict borderlines between branches of science. Some of the branches of science emerge from other branches of science or are synthesis of different fields. For example, statistics emerges from mathematics, and medicine fundamentally arise form biology and chemistry. Secondly some branches of sciences are not scientifically pure sciences, but rather are using scientific knowledge transferred into a physical environment and thus could be called applied sciences. Such fields are, for example, engineering and medicine.

Based on this summary, fields of science can be categorized from (1) hard, constructed, based on formal knowledge of mathematics and logics, which uses a priori methodology, definitions and rules, to (2) soft, empirically observable, social and behavioural.

According to this classification, economics, in line with other soft sciences, is an empirical science, where knowledge is based on observable phenomena, and where perceptions should be capable of being tested for validity and reproducibility. For a full understanding of the position of economics among other sciences and their interconnection, further deeper investigation capturing the inner links between fields of science could be of value. However, disregarding the classification of branches of science, economics is clearly stated as one of the many branches of social science alongside sociology, psychology, philosophy and other soft social sciences.

2.3. The definition and core content of economics

Finding a clear definition of economics is challenging as economists are not unanimous about the definition of what is economics. Simply stated, economics is a social science that studies economic activities. Some more definitions are presented to reveal more depth on the sense of the economics:

- economics is the social science that studies the production, distribution, and consumption of goods and services [8];
- economics is the study of how society manages its scarce resources [9];
- economics is the science which studies human behavior as a relationship between given ends and scarce means which have alternative uses [10];
- economics is the study of how societies use scare resources to produce valuable goods and services and distribute them among different individuals [11];
- economics studies how basic resources are transformed by producers into all the many goods and services that modern consumers want [12];
- economics is the study of how human beings coordinate their wants and desires, given the decision-making mechanisms, social customs, and political realities of the society [13];
- [Economics is] social science that studies the choices that individuals, businesses, governments, and entire societies make as they cope with scarcity [14];
- [E]conomics is the study of human behavior, with a particular focus on human decision making [15].

Some definitions are rather similar, although there are differences in concepts emphasized. It is discussed that definitions can also reflect the direction in which their authors want to see the subject move [16]. Summing up the different definitions, key concepts used to define economics are the following:

- social science;
- production, distribution, consumption;
- management;
- scare resources, unlimited wants;
- decision-making.

These keywords express the main essence of the ideas, which the study of the economics is based on. Combining the main ideas of the definition of economics and supplementing them with a few more concepts, it can be stated that:

- economics is a social science concerned with human behaviour, decision-making and management on individual, business and state level with the goal of increasing welfare while producing, distributing and consuming goods in the conditions of scare resources and unlimited wants.

Typically, economics is divided into two major subfields, microeconomics and macroeconomics. Microeconomics, concerned with the behaviour of individual entities such as markets, firms and households. Macroeconomics, concerned with the overall performance of the economy [17]. An important subfield to be mentioned is business administration. It is incorporated only in one of the many subfields of economics, but clearly is an important subfield as it is extensively taught in higher education institutions and is widely applied in practice, thus being the "hands-on" part of science of economics.

For deeper investigation the content of economics can be examined by considering how information within the field of economics is classified. According to a standard method of classifying scholarly literature in the field of economics that was developed by the American Economic Association for use in the Journal of Economic Literature (JEL classification) [18], economics consists of general categories listed below:

- general economics and teaching;
- history of economic thought, methodology, and heterodox approaches;
- mathematical and quantitative methods;
- microeconomics;
- macroeconomics and monetary economics;
- international economics;
- financial economics;
- public economics;
- health, education, and welfare;
- labor and demographic economics;
- law and economics;

- industrial organization;
- business administration and business economics; marketing; accounting; personnel economics;
- economic history;
- economic development, innovation, technological change, and growth;
- economic systems;
- agricultural and natural resource economics; environmental and ecological economics;
- urban, rural, regional, real estate, and transportation economics;
- miscellaneous categories;
- other special topics.

Not every aspect of economics is covered within this list of general categories, and these general categories are divided in more detailed sub-categories. However, it is obvious that economics has grown from a purely philosophical and ethical context to a more specific and formal discipline. Looking deeper in sub-categories reveals a considerable proportion of the content connected with mathematics, quantitative methods, statistics, econometrics, data analysis, modelling and other formal methods. It is also notable, that although economics is a social science, behavioural content is not dominating within the category list.

2.4. Concluding remarks

Summarising the discussed matters and taking into account the origin of the term "economics", the position among other sciences, the various ways to define economics and the basic content of the field, it can be concluded that (1) economics is dealing with managerial activities, (2) it is a social science: empirical science concerning human behaviour, (3) it is dealing with questions of producing, distributing and consuming goods in the condition of scare resources and unlimited wants, and (4) the content of economics is well developed with increased formal and mathematical impact. Thus, in the context of other sciences, economics can be labelled as perhaps the most mathematical of social sciences and hence probably the hardest of soft sciences.

3. Historical development of economics as a science

3.1. Growing out of moral philosophy

Economics as a separate science is rather young. Separate formal discipline can be dated back to the middle of the 18th century and the beginning of the classical economics that is often associated with the publication of "The Wealth of Nations" by Adam Smith in 1776. It is believed that prehistory of the economic thought started much earlier, with the Ancient Greek philosophers, as economic issues were embedded in philosophy and economical questions and were discussed in moral, theological and political tractates [19]. Some economic issues were touched upon in "Politics" by Aristotle and "Oeconommicus" by Xenophon, both written more than 300 years BC. Aristotle was supporting the need for private property, exchange of commodities and the use of money in this exchange. His concern was that people's needs are moderate, but people's desires are limitless, and thus satisfying needs was considered to be right and natural, but attemptions to satisfy desires was considered to be incorrect and unnatural. Xenophon applied the concept of efficient management starting from the household management to public administration. He believed that efficiency can be improved by practicing a division of labour. In general, Ancient Greeks were concerned with questions of fairness, justice, and equity.

After the Ancient Greek moral philosophy, the next main doctrine that had some economic insights was the scholastic doctrine existing until ~1500 C. The scholastic doctrine was strongly linked with religion and was practiced in religious schools and universities. Same as Ancient Greeks, the scholastics saw economics as a subordinate part of broader theological and moral concerns [20]. The aim of the scholastic doctrine was not to examine the economy, but to set a religious canon, by which to judge economic activities [21]. St. Thomas Aquinas is believed to be the most important of the scholastic writers with his "Summa Theologica", a doctrine on ethics and economic activity, published in 1273 C. He struggled to establish that some ownership of private property was natural and was not incompatible with religious teaching; he analysed the ethical aspect of prices and confined his economic investigation to a relatively high level of abstraction [22]. Scholasticism remained influential among

intellectuals and academics and during that period the position of economics generally remained the same. In the European universities of the 1700s economics was taught as part of moral philosophy [23]. However, scholastics made a contribution to economic theory as their tradition contains analytically insightful reflections on several economic topics that were later rediscovered [24].

The next general stage of development of economic thought was mercantilism. According to history of economic thought mercantilism was the literature and practice of the period between 1500 and 1750 concerned with questions of economic policy [25]. Economic literature of mercantilism was written by businessmen and shifted away from religious aspects to determination of the best policies for promoting the power and wealth of the nation in the context of industrialization. Mercantilists assumed that total wealth of the world was fixed and believed that a nation's wealth can be increased by encouraging production, increasing export, and holding down domestic consumption. Thus, for mercantilists there was basic conflict between private interests and public welfare, and they lacked sufficient insight into operation of the market. They advocated extensive use of government intervention and wealth of state rested on the poverty of many. It is believed that emergence of mercantilism was a break from the previous ethical insights of economic thought incorporated in the work of Aristotle, St. Thomas Aquinas and others, and thus a shift away from moral sciences [26]. In the same time, mercantilism increased the quality of economic analysis and started transition to scientific economics [27].

Conclusively, what we today call a traditional economic theory (meaning classical and neoclassical economic thought), has grown out of the Ancient Greek moral philosophy, followed by scholastic doctrine and then the ideas of mercantilists. Surely, some more influential ideas and precursors of the classical economic thought exist that were not discussed in detail (for example, heterodox writers and French physiocrats). But the general tendency is clear: pre-Smithian economics was moving away from the moral and ethical concerns of the past [28] towards a separate field of science.

3.2. Traditional economic theory

3.2.1. Classical economic theory

Publication of "Inquiry into the Nature and Causes of the Wealth of Nations" (usually shortened to "The Wealth of Nations") by Adam Smith in 1776 is considered to be the formal beginning of the classical economic theory. Scottish economist Adam Smith (1723–1790) is often called "the father of economics" and his masterpiece "The Wealth of Nations", "a bible of capitalism" [29–30].

Smith was more than an economist. He was rather a moral philosopher and an academic, who had broad understanding of the interconnectedness of the economy and great influence on economic policy. He believed that there are natural laws governing society that can be discovered. Smith had extensively read the previous literature touching economic issues and was able to take up the best ideas and synthesize them into a comprehensive system and overall vision of the forces determining the wealth of nation. Despite the lack of outstanding novelty and absence of technical style in "The Wealth of Nations", his impact on development of economics as a science was enormous. He managed to synthesize and systematize economic theory into a single work of contextual economic policy and the forces determining the wealth of nation [31].

What Smith thought with "the wealth of nation", is what we today call "economic growth", thus modern economists would call Smith as a macro theorist interested in the forces determining economic growth. According to theory of economic thought his main ideas were the following. He believed that human beings are rational, calculating and driven by self-interest [32]. If left alone, each individual will follow his or her self-interest, and in promoting self-interest promote interest of society, Smith stated [33]. That is what he called "an invisible hand". He wrote "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own self-interest" [34].

Smith was concerned that merchants use government to enrich themselves. He concluded that optimum allocation of resources occurs in competitive markets without government intervention and therefore advocated that the government follow a policy of "laissez faire" [35]. The term "laissez faire" translates from French into "let (it/them)

do", but in the context it can be translated into "let go" [36]. It is associated with classical political economy [37]. The term is used to describe an economic doctrine that opposes governmental regulation or intervention, such as regulation, privileges, tariffs, and subsidies beyond the minimum necessary for a free-enterprise system to operate according to its own economic laws [38, 39]. This idea – that economy should be driven by the market forces – has become one of the principles of capitalism and the basic economic ideology of our society.

According to Smith the principal causes of wealth was capital accumulation and productivity of labour. He conducted that trading is not a zero-sum game and both parties can benefit from trade. Smith stated that value depends on payments to all factors of production: labour, land, and capital [40].

Despite holding some incompleteness and being criticized later [41], "The wealth of Nations" no doubt was the first comprehensive publication dealing with economic issues and thus an important development in the field of economics that fostered formation of economics as a science. "The Wealth of Nations" was not written in technical, mathematical manner. It presented interconnection of the contextual economics with other social sciences. In Smith's hands economics served as a moral purpose. There was neither the sharp fact/value distinction of later economists, who adopted positivism, nor a "divorce between economics and ethics" [42].

3.2.2. Neoclassical economic theory

According to history of economic thought the beginning of the next stage of development of economic theory, neoclassical economic thought, is associated with three publications independently issued by three writers form different countries, which encompassed ideas of marginal analysis:

- in 1871 English economist William Stanly Jevons (1835–1882) published "Theory of Political Economy";
- in 1871 German economist Carl Menger published (1840–1921) "Principles of Economics";
- in 1874 French economist Léon Walras (1834–1910) published "Elements of Pure Economics" [43–46].

Ideas of the all three authors are similar enough to be discussed jointly. Jevons, Menger and Walras found the classical theory of value inadequate to explain the forces determining prices. They suggested that prices depend on the marginal utility of the commodity the buyer expects to receive, not the costs incurred in producing a commodity. As Menger wrote in his "Principles of Economics" "The value of goods arises from their relationship to our needs and is not inherent in the goods themselves" [47].

Jevons, Menger and Walras also recognized that a significant element in price determination is the marginal utility, not total or average utility. They suggested the principle of diminishing marginal utility, respectively, if the consumption of commodity increases, its marginal utility decreases. Without explicit examination they assumed that individuals were capable to measure utility and make comparisons between utilities.

Walras took the idea of marginal analysis even further. He understood the interrelatedness of prices and economic activity and formulated a general equilibrium model. That is what today we know as the classical graph of crossed supply and demand curves showing how the interaction of demand and supply result in an overall general equilibrium.

Another important contributor to the neoclassical economic thought was an English economist Alfred Marshall (1842–1924), who published his "Principles of Economics" in 1890, developing partial equilibrium microeconomic theory [48]. Marshal understood that economics is actually very complex; economic forces are constantly changing, and everything seems to depend upon everything else. Thus, he assumed that changes in certain elements are "ceteris paribus" ("with other things being equal") and analysed conditions of economic equilibrium taking into consideration only a part of the market. For example, in partial equilibrium theory the prices of substitutes, complements, as well as income levels of consumers, can be assumed constant to make analysis much easier than in an all-inclusive general equilibrium model. Thus, by applying the principle of "ceteris paribus" analytical progress was achieved.

Marginal analysis, general and partial equilibrium models, principle of "ceteris paribus" and use of other theoretical constructions led to controversies over methodology of economics. Analysis of economics became deductive in its approach, occupied with abstract models, focusing on issues of microeconomic theory. Neoclassical economic theory initiated great increase in the use of mathematics in economic analysis. Economists became more aware of the power of mathematical and statistical analysis, and that encouraged the present dominance of mathematical models and econometric techniques in theory testing.

During the period of development of neoclassical economic thought, political economy gradually emerged as a profession; step by step the field turned form political economy into economics and the scope of the discipline became narrower, experienced specialization and adopted mathematical methods of natural sciences, thus, hardened [49]. Nowadays theories of neoclassical economics have become mainstream economics [50].

3.3. Concluding remarks

To sum up the course of the main ideas during historical development of economics as a science, summarising overview has been drawn up (Fig. 4). It does not claim to cover all doctrines and all contributors of the development of economics as a science; detailed timelines are widely available in other sources [51]). Yet the purpose of this figure is to summarize and draw conclusions about the general ideas, approaches and contributors at some turning points of the development of economics as a science, and thus to highlight the most significant historical shifts of tendencies in the field.

Figure shows that mainstream economics is based on traditional economic thought, mainly on classical and neoclassical economic theories. Ideas from classical and neoclassical economics are insightful, relevant and widely incorporated in the present economics education. The overview (Fig. 4) allows concluding that in the context of historical origins economics has become more mathematical and less moral.

<table>
<tr><td></td><td colspan="3">Pre-history of traditional economic thought</td><td colspan="2">Traditional economic thought → Mainstream economics</td></tr>
<tr><td>Leading doctrine</td><td>Ancient Greek moral philosophy
... B.C....</td><td>Scholastic doctrine
... - ~1500 C.</td><td>Mercantilism
~1500-1750 C.</td><td>Classical economic theory
1776 C. - ...</td><td>Neoclassical economic theory
1871 C. - ...</td></tr>
<tr><td>Main contributors</td><td>Aristotle
Xenophon</td><td>St. Thomas Aquinas</td><td>Businessmen</td><td>Adam Smith</td><td>William Stanly Jevons
Carl Menger
Léon Walras
Alfred Marshall</td></tr>
<tr><td>Approach</td><td>Philosophical approach</td><td>Philosophical and theological approach</td><td>Mercantile policy approach</td><td>Contextual approach</td><td>Micro-economical, mathematical approach</td></tr>
<tr><td>Attitude towards morality</td><td colspan="2">Moral standards as central issue</td><td>Moral issues not analysed</td><td colspan="2">Some moral issues considered</td></tr>
<tr><td>Use of mathematics</td><td colspan="2">Lack of mathematical analysis</td><td colspan="3">Increase in use of mathematics</td></tr>
<tr><td>Concepts and focus</td><td>Fairness, justice, equity. Needs and wants.</td><td>Private property, ethical aspect of prices.</td><td>Policies for promoting wealth.</td><td colspan="2">Human beings rational and driven by self-interest.</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Free market, self-regulation (“invisible hand”). Specialisation. Prices based on costs.</td><td>Marginal utility theory. Equilibrium theory.</td></tr>
</table>

Fig. 4. Summary of the development of economics as a science: main doctrines, turning points and tendencies (self-made summary)

4. Historical transformation of economics

4.1. "Hardening" with more extensive use of mathematics

Throughout the development of economics as a science, there has been an emergence of the use of mathematics in economics and thus hardening of the economics. Some math was applied in mercantilism, but first significant increase in use of mathematics started with the development of traditional economic theories and mostly during the rise of neoclassical economics. While Smith, the originator of the classical economic thought, used very little mathematics [52], creators of neoclassical economic thought understood the need of application of mathematical techniques and brought much more mathematical insights into economics. Yet the role they attached to these insights differed. For example, Jevons, one of the creators of neoclassical economic thought, claimed that "Economics, if it is to be a science at all, must be a mathematical science" [53]. Likewise Marshal also concluded that "Economics has made greater advances than any other social sciences, because it is more definite and exact than any other" [54] and showed a great interest in mathematical formulation of the economic theory [55]. However, at the same time Marshall himself did not want mathematics to outshine economics. In his books mathematical content was kept in the footnotes and appendices for professionals and the text of his books was readable and understandable for layman [56]. The advice of Marshall is often, when discussing the use of mathematics in economics. In a letter written in 1906 to his friend, A. L. Bowley, who used mathematics in economics research, he suggested the following system:

"(1) Use mathematics as shorthand language, rather than as an engine of inquiry.
(2) Keep to them till you have done.
(3) Translate into English.
(4) Then illustrate by examples that are important in real life.
(5) Burn the mathematics.
(6) If you can't succeed in 4, burn 3. This I do often."[57]

Thus, Marshall believed that mathematics should be just an instrument to enrich and formalize the analysis in economics.

However, with the rise of neoclassical economic theory more and more articles were published with excessive use of mathematics, and the triumph of mathematics in economics has continued further and is still relevant nowadays. This mathematization of economics is proven with concrete statistical evidence in research measuring and analysing increasing number of equations and econometric outputs per article [58]. Basic mathematical instruments include functions, equations, graph analysis, modelling and other techniques, and economical concepts may be incomplete without use of those instruments [59]. What is more important, the computer science since the mid twentieth century and particularly during the twenty-first century has enhanced mathematization of the economics as high-power computing devices are available for statistical analysis and mathematical modelling [60].

Bringing mathematics in economic research and hardening the science of economics surely has been beneficial. The main advantage of mathematical statements is that they are precise [61]. But this massive mathematization of the field has also raised a discussion in literature about the drawbacks of the impact of the highly excessive use of mathematics in economics. Is has been discussed that economics is empirical by nature, but mathematical economics is non-empirical, and mathematics can only describe the economic phenomenon, but cannot explain it. There also is criticism about the dependency on fundamental theories, irrelevant assumptions, lack of predictive power, inability to be universally valid and need for more realistic models [62]. The existence of papers with unnecessarily advanced mathematics, which do not actually say very much, has been noted as well [63]. It has been discussed that extensive use of mathematics has led to appearance of various models, which are built on simplifying assumptions, up to the loss of essence [64].

It is understandable that the more general and abstract a theory, the narrower its field of application. Mathematical economics models human behaviour in an over-simplified manner and the price for abstraction is a break from reality. But any model can only claim to be a simplified representation of reality. It is also probable that mathematization of the economics has been motivated by the willingness to harden economics. Soft sciences are often considered less valuable and less scientific than hard sciences. There is evidence that researchers in soft sciences are often facing negative perception [65].

For decades there has been an ongoing discussion on the benefits and dangers of the use of mathematics in economics, and this debate should be regarded as a matter of degree and the appropriateness of this abstract science as the instrument for the intended use in the empirical field [66]. The usage of mathematics in economics should be balanced [67]. "Each science must make use of their own methods and should only borrow tools and techniques specific to other areas of research, useful for discovering results" [68].

4.2. Reattachment from moral philosophy and specialisation

As discussed previously (Section 3 "Historical development of economics as a science") historically economics has grown out of the moral philosophy, experienced separation, and at first formed into political economy and afterwards into a field named economics. Throughout the process of forming as a separate science economics has been reattached from its roots of moral philosophy. Nowadays positive economics, dealing with questions "what is", is dominating over normative economics accessing "what ought to be" [69–70]. However, it is hard to define a strict borderline, when economics became value-free. A lot of moral and ethical questions were stated in pre-history of traditional economic thought, Ancient Greek moral philosophy and Scholastic doctrine. Furthermore, during the formation of classical and neoclassical economic thought some insights of ethical aspects were still covered. For example, Smith wrote that "Every man, as long as he does not violate the laws of justice is left perfectly free to pursue his own interest in his own way." [71], thus by presenting his system of natural liberty he did not forget to mention the moral concept of justice. However, after the rise of neoclassical thought the extent of the moral judgments in economics continued to decrease over time. Nowadays the mainstream economics has accepted this transformation [72]. "Most economists today […] would agree that the claim of an economic theory free from values is essential in establishing the scientific nature of the discipline. A positive, value-free economics, in the sense of not relying on any particular set of value judgments or on any philosophical or psychological framework, is generally seen as ideal" [73].

Although this "scientification" of economics is widely accepted, there is ongoing discussion whether this divorce from fields of soft social sciences lying nearby economics is of value. There are arguments regarding the need for reconsideration from an interdisciplinary perspective as in reality economics simultaneously incorporates other fields of science (incorporation with politics, mathematics, psychology, law, philosophy, art and religion mentioned in [74]; as important pillars – the institutional knowledge of economy, history, sociology, politics, and even art, literature and philosophy of the society mentioned in [75]).

Thus, the questions, does science and especially economics have to be treated from interdisciplinary perspective and does it have to have a moral dimension, are open.

4.3. Concluding remarks

General tendencies throughout historical development, formation and transformation of the field of economics suggest that economics has become more mathematical and thus harder as a science, more concrete and specific, separate from moral concerns and normative judgments. Because of this transformation of the field, there is ongoing discussion about the degree of the use of mathematics in economics, risks of losing economic sense by overuse of abstract constructions and actual interrelatedness with other sciences including those, holding some moral dimensions.

5. Fundamental challenges and subsequent changes in the field of economics

5.1. Fundamental challenges in the field of economics

Nowadays the mainstream economics based on classical and neoclassical economic thought is a well specified field of science using technics built on assumptions of human rationality. Assumptions which the economic analysis is based on and which are mainly taken as granted without questioning their ability to hold include the following:

"1. People have rational preferences among outcomes. 2. Individuals maximize utility and firms maximize profits. 3. People act independently on the basis of full and relevant information" [76].

In the mainstream economics people are assumed to be "homo economicus": fully rational, narrowly self-interested agents, who pursue their utility maximisation and have information needed and mental capability to constantly act in the described way and solve optimization problems. "The paradigm of the homo economicus, i.e. of the "perfect egoist", is still the dominating approach in economics" [77].

Surely, the rational agent assumption is very charming, as it is possible to derive powerful and appealing economic theories from it. But at the same time, it can be called "a figment located at the intersection of many economists' imagination" [78] and there is empirical evidence, which suggests deficiencies and thus challenges the mainstream economics. Research has revealed that human cognitive abilities and capacities are bounded [79]. The rational agent approach has been repeatedly challenged [80–81]. Cognitive shortcuts in decision making, named heuristics, have been identified [82]. Recorded biases show that people as economic agents do not always fit rational models and the list of cognitive biases that confront assumption of the perfect rationality is surprisingly long [83]. Some of the cognitive biases that challenge the assumption of perfect rationality of economic agents are exemplified below. Empirical investigation reveals that people are tended to:

- making decisions based on potential value of gains or losses rather than final utility;
- feeling greater disutility of giving up an object than the utility associated with acquiring it;
- weighting probabilities subjectively, at some conditions being risk-averse, at some – risk seeking;
- estimating what is more likely by what is more available in memory and thus judging probabilities based on resemblance;
- unconsciously substituting complex judgment by an easier judgment; thus, tending to effort-reduction and simplification in decision-making;
- resisting selling an asset that has declined in value;
- demanding much more to give up an object than they would be willing to pay to acquire it;
- being affected by anchoring;
- etc.

Biases listed here are not exclusive and are not specifically named as they are provided only with the aim to exemplify challenges of rational agent assumption. There are plenty of other biases not mentioned here and showing imperfectness of economic agents (see detailed list in [84] and [85]).

Research has shown that people as economic agents are not perfectly rational; people often react emotionally, their optimization capabilities are limited, and behavioural choices may be irrational in the sense of non-optimal. Consequently, significant challenge in the field of mainstream economics is the unrealistic assumption of human rationality and the lack of empirical approach. Insights from psychology, one of the side sciences from which economics has been separated during the development and specialization of the field, has resembled the imperfectness of purely theoretical and mathematical approach in economics.

Thus, the relevance of psychological and social factors in mainstream economics tends to be overlooked [86]. There should be more research in economics with focus on testable predictions with empirical validation [87–89] and modelling approaches for complex systems [90–91].

5.2. Subsequent changes in the field

5.2.1. Development of behavioural economics

As a reaction of incompleteness of traditional economic models an interdisciplinary field of behavioural economics has been forming since the second half of the twentieth century. If mainstream ideology was to separate psychology from the money-making concerns as simplified assumptions were needed for mathematical modelling in economics, formation of behavioural economics aimed to merge economics with psychology back again. "Behavioral economics central point lies in the aspect that the psychological (behavioral) base of economic analysis will add up to the overall contextual body of Economics respectively" [92]. Thus, behavioural economics is an alternative and complemental approach that tries to encompass aspects forming the systematic deviations from the mainstream models into models with better descriptive explanatory power.

There are numerous notable researchers in the field. However, perhaps the most influential work that enhanced the formation of behavioural economics has been drawn up by two Israeli-American psychologists, Daniel Kahneman (born in 1934) and Amos Nathan Tversky (1937–1996) [93–94]. Working together they recognized a cognitive basis for common human decision-making errors which are based in heuristics and biases. They compared their cognitive models of decision-making under risk and uncertainty to the existing economic models and developed prospect theory, more realistic alternative of decision making model than the expected utility theory [95]. Their publication "Prospect Theory: An Analysis of Decision under Risk" in 1979 in journal "Econometrica" was significant in formation of the field [96]. According to the prospect theory the concepts underlying decision making under uncertainty are the following:

- reference dependent utility function (people make decisions based on the potential value of losses and gains rather than the final outcome);
- subjective decision weights (people are tended to risk-averse behaviour when gains have moderate probabilities or losses have small probabilities; risk-seeking behaviour when losses have moderate probabilities or gains have small probabilities);
- impact of framing in decision making (people react to a particular choice in different ways depending on how it is presented) [97–98].

Apart from the prospect theory Kahneman, Tversky and other researchers have brought great deal of other insightful ideas of psychology in economics to better understand decision-making of economic participants. In 2011 book of Kahneman "Thinking, Fast and Slow" representing the work he often did in collaboration with Tversky was published. It gave an overview of the field and presented the idea of two thinking systems of economic agents – one being fast, instinctive, emotional, other being slower, more effortful, deliberative, and more logical. This work highlighted the differences between these two systems and demonstrated how they arrive at different results even when the same inputs are given [99]. American economist Richard H. Thaler (born in 1945) has been influential as further developer of the field. He together with an American legal scholar Cass Robert Sunstein (born in 1954) wrote a book "Nudge: Improving Decisions about Health, Wealth, and Happiness", first published in 2008. Thaler's work has shown possible benefits from the so called nudging: "choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives" [100]. Thus, by knowing how people think, such choice environments can be designed that make it easier for people to choose what is best for them [101–102].

The work of behavioural economists was noticed. In 2002 Kahneman (Tversky had already passed away) received the Nobel Prize (The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2002) for the following contribution: he "integrated economic analysis with fundamental insights from cognitive psychology, in particular regarding behavior under uncertainty, thereby laying the foundation for a new field of research" [103].

And in 2017 Thaler was awarded the Nobel Prize (The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2017) "for his contributions to behavioural economics" [104].

Kahneman, Tversky, Thaler and other leading academics in behavioural economics have formed and significantly strengthened the relatively new interdisciplinary field. Surely, the field is developing both academically and practically. The use of the term "behavioural economics" in scholarly papers has increased [105]. And there is a growing impact of behavioural economics in policy as well, as countries like the United States, Australia, the UK and others have developed teams of behavioural scientists with the aim to help the government to apply insights form behavioural science in practice [106].

Although rising recognition of the interdisciplinary field of behavioural economics, there exist variation in views of added value of behavioural economics and its inclusion or non-inclusion in mainstream economics [107–109]. Surely, behavioural economics has become a research direction in economics that is questioning the traditional economy postulates. Behavioural economics is increasingly recognized and an important field, but in the same time still fragmented, complex, relatively young and thus still forming.

5.2.2. Development of empirical economics

In line with the development of behavioural economics, in the second half of the twentieth century there has been a rise of empirical economics as well. Implementation of experimental methods in economics has been a significant methodological shift. "In just a few decades, economics has been transformed from a discipline where the experimental method was considered impractical, ineffective and largely irrelevant to one, where some of the most exciting advancements are driven by laboratory data" [110]. Experiments in economics have helped to include more practical insights into the highly theoretical science of economics and have responded to the need for actual observations not just simplified modelling. Motivation for empirical economics was the following: "For social scientists, experiments are like microscopes or stobre lights. They help us slow human behaviour to a frame-by-frame narration of events, isolate individual forces, and examine those forces carefully and in more detail" [111]. The shift towards more empirical work in economics has been approved and even called "one of the most stupefying methodological revolutions in the history of science" [112].

There are several influential academics in the empirical economics. American economist Vernon L. Smith (born in 1927) is considered to be the most influential originator of the field [113, 114]. As he himself has stated, he found it a challenge to convey basic microeconomic theory to students and thus tried to run market experiments with the aim to give students an opportunity to experience an actual market and conditions of supply and demand [115]. This encouraged the development of economic experiments, and consequently Smith formalized the methodology of experimental economics in two influential articles "Experimental Economics: Induced Value Theory", published in 1976, and "Microeconomic Systems as an Experimental Science", published in 1982 [116]. In 2002 Smith received the Nobel Prize (The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2002) "for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms" [117]. If Kahneman, the other Nobel Prize winner in 2002, in his most influential work focused on the analysis of individual behaviour, Smith in contrary put more emphasis to the aspects of interactions between individuals, formation of social institutions and collective thinking [118].

The developed methods for laboratory experiments in economics have helped to increase understanding of economic behaviour and have been useful for ruling out alternative explanations. Also, a great deal of evidence in behavioural economics comes largely from laboratory experiments. Laboratory experiments have become more common among economists and thus economics has become more experimental as a science. However, there is not a unanimous view about the role of experimental economics in context of the mainstream economics. Although being relatively young as a research field the experimental economics has become a widely accepted tool for economists. But being acknowledged as significant research field, it is also believed that the experimental economics does not form a separate paradigm, rather introducing concepts that can be incorporated in the mainstream economics and thus becoming as one of the tools for economics [119].

5.3. Concluding remarks

The assumption of economic agents being fully rational, self-interested utility maximisers is underlying a great deal of the mainstream economics. There has been an increasing amount of empirical evidence representing deviations from this assumption. Consequently, it has been a fundamental challenge for the mainstream economics. In response to oversimplification in assumptions and incompleteness of traditional models, relatively new and expanding branches of economics such as behavioural economics and empirical economics have been developing starting mostly from second half of twentieth century.

Summary of the fundamental differences and contradictions between the traditional mainstream economics and the rising field of behavioural economics is presented in Figure 5.

The illustration in Figure 6 is presented to enlighten and summarise the role of empirical economics as a fruitful tool in economic research.

According to Figure 6, theory allows us to generate predictions about the world, but "in an experiment, you actively engage the world and create a learning opportunity that would not otherwise exist" [121]. Thus "experiments turbo-charge the engine of science" [122] and help to deepen and make more sophisticated theory.

Traditional economics *(based on classical and neoclassical thought)*	**Behavioural economics** *(interdisciplinary, based in psychology)*
People – rational - Rational agent theory, *homo economicus* - Expected utility theory	People – not always rational, there are systematic deviations from rationality - Bounded rationality, heuristics and biases - Prospect theory
Markets – efficient - Efficient market hypothesis - Capital asset pricing model - No free lunch	Markets – not always efficient, there are systematic deviations from efficiency - Empirical evidence on "market bubbles" - Crowd psychology
World – calculable	World – complex
Approach – mostly normative	Approach – mostly descriptive

Fig. 5. Traditional economics *versus* behavioural economics (self-made summary)

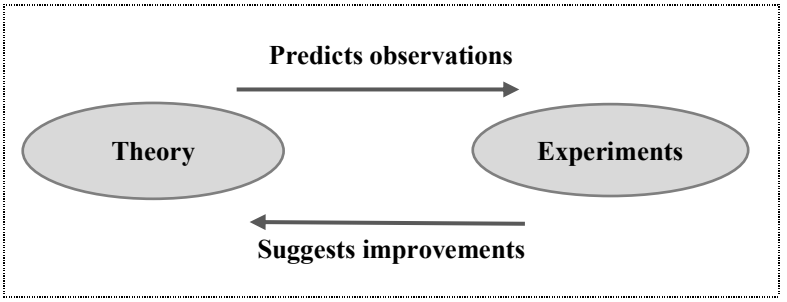

Fig. 6. The engine of science (made based on figure originally created by D. Friedman and A. Cassar; source [120])

The rise of behavioural economics and empirical economics has been an attempt to return economics back to more realistic context. Behavioural economics, demonstrating the influence of psychological and social factors in economic decision making, as well as empirical economics, and representing the need to observe actual real-word economic activities, have been acknowledged. In a way this has been a return to an approach seen earlier in history of development of economics as a science. Although the role of those new fields and possible incorporation into the mainstream has been under discussion, surely, further empirical and applied research that would expand our understanding of real-world economic choices is of value.

Conclusion

The analysis of the development, transition and challenges of economics as a science carried out in this article has enlightened the fundamental ground of the rise of the behavioural and empirical economics. Historical context has been fruitful for understanding reasons and making conclusions about the general tendencies in the field of economics. These tendencies include (1) historical shift from moral science to mathematical science, "hardening" of the science and increase in use of simplified assumptions about human rationality needed for mathematical modelling in economics, (2) following empirical evidence about the deviations form oversimplified models of traditional mainstream economics, and consequent rise of fields of behavioural and empirical economics aiming to reattach science of economics to the real world again and to reconstruct our understanding about the complexity of modelling socio-economic systems.

Apart from the mentioned direct conclusions about the tendencies in the field of economics, this article could also make an attempt to encourage thinking about several fundamental issues of economics as a science, which partly arise from the analysis but were not discussed in detail. Some of those issues might be thought-provoking for further investigation or can serve as possible topics for scientific discussions about economics as a science. The issues and consequent questions are the following:

- Hardening of the soft science:
  - Does more mathematics in economics make it more scientific? Does harder implies more scientific?
  - Hasn't mathematics outshined economic theory in the mainstream economics?
  - Is economics capable of achieving the intellectual precision of the hard sciences? And should it aim to achieve it?
- The extent of specialization and interconnectedness:
  - Should analysis of economics be done in separation from other disciplines? Or is the interdisciplinary framework needed?
- Moral aspects of economics as a science:
  - Should economic analysis be normative and incorporate value judgements? Or, in contrary, should economic analysis attempt to be value-free when describing and explaining economic phenomena?
  - Can economics become more mathematical and more moral at the same time?
- Pluralism of economics, the role of heterodox approaches and the road to became included in the mainstream:
  - Is there enough pluralism in economics? Are there enough heterodox approaches, alternative perspectives, real world applications and social, political and moral context in the mainstream economics? Thus, are economists being trained right? Is the economics education wide enough?
  - What it takes for a field to become scientifically significant and accepted? What is takes for a field to become incorporated in the mainstream? What confirms the inclusion in the mainstream? Is it appearance in academic economic education or are there other indicators?
- The role of the behavioural and empirical economics:
  - What is the role of behavioural and empirical economics in the context of the mainstream economic thought? Are these fields included in the mainstream economics? Or are they considered as alternative approaches? To what extent behavioural and empirical economics are included in education programs of economists? What else must be reached in behavioural economics and empirical economics to become compulsorily included in education programs of economists?

Standing apart from a strict position towards the issues raised, as many of them still need to have deeper investigation, nevertheless I tend to believe in (1) the necessity to retain economic sense during hardening of the economics as a science, (2) the need to admit interconnectedness with other sciences and advance from it, (3) potential benefits from rising some moral issues in economic analysis again, and (4) the need for widening the scope of traditional mainstream economics by incorporating alternative perspectives, including behavioural and empirical economics.

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Hyper-heuristics for Structure and Parameters Tuning in Evolutionary Algorithms

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Abstract

Evolutionary algorithms have proved their efficiency solving many complex optimization problems. Evolutionary algorithms are metaheuristics that provide search in a space of problem solutions. The performance of evolutionary algorithms depends on their structure and parameters, which should be fine-tuned for each optimization problem. In this paper, we discuss hyper-heuristic methods that provide search in a space of evolutionary metaheuristics. Hyper-heuristics are used for solving the problem of automated algorithm selection or design. It is shown that hyper-heuristics are domain-in depended. A selective hyper-heuristic with online learning is proposed. The experimental results and comparison with some well-studied techniques are presented and discussed.

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Keywords: evolutionary algorithms; optimization problem; selection, combination, generation.

1. Introduction

Optimization problems take place in different scientific and applied fields. There exists variety of problem statements, which define different classes of optimization problems and corresponding approaches for solving these

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problems. Many real-world optimization problems are known as complex (or hard). Usually there is very poor information on the objective landscape, the search space and other features of the problem or this information cannot be introduced into optimization algorithms. Such problems are called "black-box" optimization problems (BBOPs).

Although we cannot use many well-studied exact methods of mathematical programming for BBOPs, there exist many efficient heuristics, which are generally based on experts' knowledge or experience and are domain- or problem-specific. A heuristic produces an optimal solution (or a good enough suboptimal solution) more quickly when classic methods are too slow, or finds an approximate solution when classic methods fail to find any exact solution.

In real-world BBOPs we cannot choose a proper heuristic to the given problem. Moreover, as the heuristic is problem-specific, we need to adapt it to the new instance of a BBOP. A more advanced technique is a metaheuristic search. The term "metaheuristic" was proposed at mid-80s as a family of searching algorithms which are able to define a high level heuristic used to guide other heuristics for a better evolution in the search space. An advantage of a metaheuristic is that it requires no special knowledge on the given optimization problem to be solved. There have been proposed a large variety of metaheuristics for BBOPs. The majority of the approaches and the best results are achieved in a field of nature- and bio-inspired algorithms. In this study will focus on evolutionary (EAs) and genetic algorithms (GAs), which have proved their efficiency with wide range of optimization problems. Unfortunately, when we deal with hard BBOPs, EAs still require fine-tuning of its structure and parameters for sufficient or better performance. Many different approaches, including parameterless EAs, EAs with adaptive parameters, self-tuning (self-adaptation, self-configuration) EAs, have been proposed and discussed. We can found from many papers that the most recent studies are devoted to a problem of automating the design of metaheuristic optimization algorithms. In this case, we can talk about hyper-heuristics.

The term "hyper-heuristics" was first used Schaefer et al. [6] in 2001. The discussed hyper-heuristic was applied for a combinatorial optimization problem and was considered to be a high-level approach that, given a particular problem instance and a number of low-level heuristics, can select and apply an appropriate low-level heuristic at each decision point. In short, we can define a hyper-heuristic as a metaheuristic that designs a metaheuristic.

In real world optimization problems, the problem of designing, tuning and applying an appropriate search algorithm is viewed as single-use one. At the same time, in the field of computational intelligence iterative processes are used for training a computational model, which is based on previously solved instances of the problem (called a training dataset), and which is applied after that to new instances (a test dataset or a prediction with new data). The same idea can be used with EAs and GAs. In this study we propose and discuss a hyper-heuristic approach which demonstrates high efficiency within wide range of optimization problems of chosen problem classes.

The rest of the paper is organized as follows. Section 2 describes works related to hyper-heuristics classification. Section 3 describes known and well-studied and the proposed approaches. In Section 4 some results of numerical experiments are discussed. In the Conclusion the results and further research are discussed.

2. Related work

The term hyper-heuristic is relatively new. However, the idea of automating the design of heuristics is not new, and it can be found across Operational Research, Computer Science and Artificial Intelligence. In the field of EAs, the problem of automating the design of an EA's structure and parameters is also known as the "self-configuration" problem. According to Schaefer et al. [6] the term self-configuration has several meanings.

Deterministic Parameter Control using some deterministic rules without taking into account any feedback from the evolutionary search. For example, the time-dependent change of the mutation rates.

Self-control or self-adaptation of the control parameters of the EA. Usually optimization of the control parameters is viewed as a part of the optimization objective. Values of controlled parameters are included in the population or in the chromosome of individuals. The advantage of the approach is that we solve the only optimization problem to cover two initial problems. Unfortunately, the new search space is larger and the new optimization problem can be more complex.

Meta-heuristics for the EA control that combine the EA with some other adaptive search techniques. Usually the approach is based on the external control procedure. Good results are obtained using the fuzzy-logic technique.

Self-configuration via the automated and adaptive design of an efficient combination of the EA components from

the predefined set.

Third and fourth options are the most perspective as they control both an algorithm's structure and values of its parameters. And they both use meta-procedure for providing self-configuration.

More straight-forward approach based on using an EA to tune an EA. According to Freisleben and Härtfelder [3] this can be done using two EA: one for problem solving and another one (so-called meta-evolutionary algorithm) to tune the first one.

These and many other approaches are related to the idea of searching over a space of possible algorithm configurations, and are, therefore, related to hyper-heuristics.

We can define a hyper-heuristic as a high-level approach that, given a particular problem instance and a number of atomic heuristics, selects and applies an appropriate heuristic at each decision point. This definition of hyper-heuristics was expanded to refer to an automated methodology for selecting or generating heuristics to solve hard computational search problems in Burke EK et al. [1].

In the field of machine learning, there is an approach for selecting an appropriate algorithm or for generating new algorithms by model combinations. This approach is similar to the hyper-heuristic approach in optimization, and is called meta-learning. Different types of the meta-learning are presented in Figure 1 according to Pappa GL et al. [5].

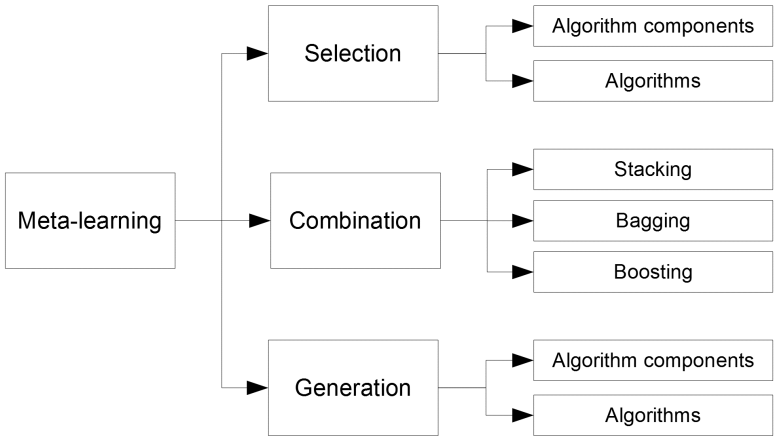

Fig. 1. Classification of meta-learning approaches in machine learning

In Vrugt et al. [12] similar approach has been proposed for classification of hyper-heuristics in optimization. Burke has proposed the great survey and new classification in the field of hyper-heuristics.

In Cowling et al. [2], a general classification of hyper-heuristics according to two dimensions: the nature of the heuristic search space and the source of feedback during learning are proposed. The first characteristic defines the following two classes:

- Heuristic selection: Methodologies for choosing or selecting existing heuristics.
- Heuristic generation: Methodologies for generating new heuristics from components of existing heuristics.

A second level in this dimension corresponds to the distinction between constructive and perturbative search paradigms. Perturbative methods work by considering complete candidate solutions and changing them by modifying one or more of their solution components, while constructive methods work by considering partial candidate solutions, in which one or more solution components are missing, and iteratively extending them.

With respect to the source of feedback during learning:

- Online learning hyper-heuristics: Learn while solving a given instance of a problem.
- Offline learning hyper-heuristics: Learn, from a set of training instances, a method that would generalize to unseen instances.

- No-learning hyper-heuristics: Do not use feedback from the search process.

The Burke's classification is presented in Figure 2.

As we can see from surveys, the majority of known hyper-heuristics are proposed for combinatory optimization problem. At the same time, there is a lack of approaches for BBOPs using EAs and GAs.

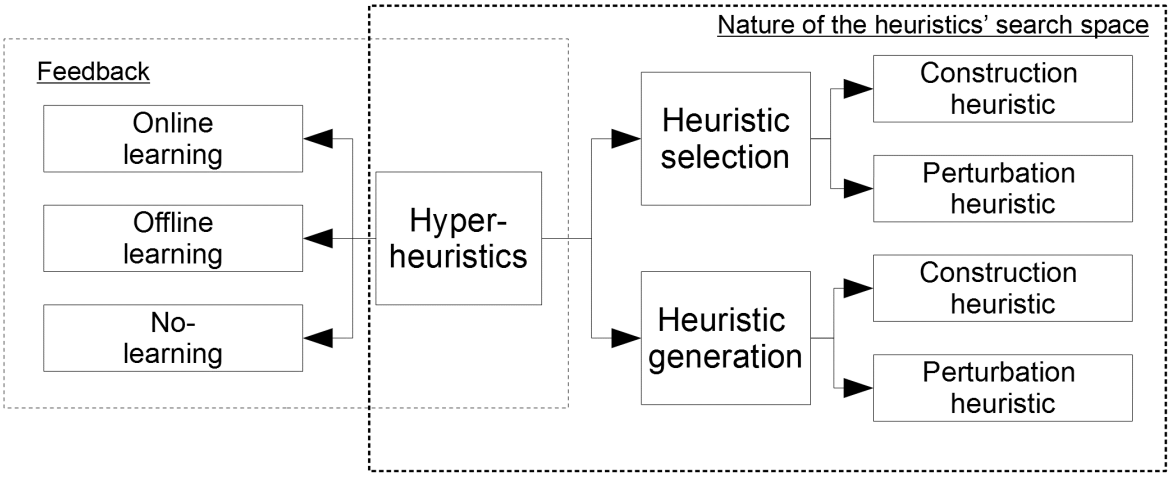

Fig. 2. Classification of hyper-heuristics in optimization

In Swan and Woodward [10] it is also mentioned that a hyper-heuristic can be decomposed into hyper- and problem-layers. The problem-layer is domain-specific and contains set of low level heuristics, problem description and fitness-function. The hyper-layer contains methodologies to decide which low level heuristic to apply to which solution based on the history of previously visited solutions and their fitness values. These methodologies can be domain-independent. In this study, we will focus on the hyper-layer.

3. Hyper-heuristic approaches

We will discuss heuristic generation methodologies at first. The defining feature of this class is that the hyper-heuristic searches a space of heuristics constructed from components rather than a space of complete, pre-defined, heuristics.

The best results are achieved with genetic programming (GP) in Koza and Poli [4], which is an evolutionary computation technique that evolves a population of computer programs. The GP is the most common methodology used in the literature to automatically generate heuristics. However, GP is not inherently a hyper-heuristic, as the evolved programs can also directly represent problem solutions. At the same time, the GP can be used for generating low level heuristics for heuristic selection methods (for example, we can generate a distribution of probabilities for operations of selection and mutation in GAs) or a complete EA or GA.

Although the GP is widely applied in the field of computational intelligence, there is a lack of heuristic generation approaches for EAs or GAs using the GP.

Heuristic selection methodologies are wider spread, especially for well-studied techniques. One of the known approaches is an ensemble method, which control operation (select) of many different Gases. According to the above-mentioned classification, the approach is the selection hyper-heuristic as it operates with pre-defined EAs, and it is the online learning hyper-heuristic as it uses feedback from the search process to control interactions of component algorithms in the ensemble. As is known from the field of statistics and machine learning, on average, the collective solution of multiple algorithms provides better performance than could be obtained from any of the constituent algorithms. Thus we will try to reach two goals of automating the EA design and improving the EA performance on complex optimization problems.

The idea of multi-EA search is not new, but there exist only few efficient techniques. Some known approaches are a Multi algorithm genetically adaptive method for single objective optimization (AMALGAM-SO) in Vrugt et al. [12], Population-based algorithm portfolio (PAP) in Tang et al. [11], Multiple evolutionary algorithm (MultiEA) in Yuen et al. [14], Multi-strategy ensemble dynamic multi-objective evolutionary algorithm (MS-MOEA) in Wang and Li [13], and others.

In our previous studies the following selective hyper-heuristic in a form of ensemble have been proposed in Sopov [8]. The main idea of the approach is to include different EAs with different structures and parameters in the ensemble and to design effective control of algorithm interaction. We assume that if the hyper-heuristic operates with very different EAs with fundamentally different properties, it is able to improve the use of their individual advantages and minimize the effects of the disadvantages. Our hypothesis is that different EAs are able to deal with different features of the optimization problem, and the probability of all algorithms failing with the same challenge in the optimization process is low. Moreover, the interaction of algorithms can provide the ensemble with new options for optimization, which are absent in component algorithms.

The proposed hyper-heuristic approaches combine concepts of the island model and cooperative and competitive co-evolutions. We will discuss some general ideas of the proposed hyper-heuristic; more detailed information can be found in Sopov [8].

The general structure of the proposed method is called Self*GA in accordance with a common notation, where "Self" means that the approach is self-configuring, the star sign corresponds to the certain optimization problem.

The total population size (or the sum of populations of all component GAs) is called the computational resource. The resource is distributed between algorithms, which run in parallel and independent over the predefined number of iterations (called the adaptation period). All algorithms have the same objective and use the same encoding (solution representation). All populations are initialized at random. After the distribution, each GA included in Self*GA has its own population which does not overlap with populations of other GAs. At the first iteration, all algorithms get an equal portion of the resource. This concept corresponds to the island model, where each island realizes its own search strategy.

After the adaptation period, the performance of individual algorithms is estimated with respect to the objective of the optimization problem. After that, algorithms are compared and ranked. GAs with better performance increase their computational resource (the size of their populations) by decreasing population sizes of other algorithms in the ensemble. At the same time, all algorithms have a predefined amount of resource that is not distributed to give a chance for algorithms with low performance. This concept corresponds to the competitive co-evolution scheme. On this stage the selection of meta-heuristics from a predefined set is performed.

Finally, migrations of the best solutions are set to equate the start positions of algorithms for the run with the next adaptation period. According to the optimization problem, such a migration can be deterministic, selection-based or random. This concept corresponds to cooperative co-evolution.

Such a technique eliminates the necessity to define an appropriate GA with efficient search strategy for the problem as the choice of the best algorithm is performed automatically and adaptively during the run. Moreover, the hyper-heuristic is domain-independent. A domain-specific knowledge is applied only on low heuristic level with a fitness function evaluation or with genetic operation (if an operation based on problem-specific representation).

We have summarized some previous experimental results for BBOPs of different classes, which are presented and discussed in the following section.

4. Experimental results

4.1. Dynamic optimization problems

Non-stationary optimization problems are also called dynamic optimization problems (DOP) or changing (non-stationary, dynamic) environment optimization. There exist the following types of environmental changes: coordinate transformation, landscape rescaling, landscape stretching. There also exist a great variety of DOP techniques to deal with the certain type of changes. Most of them are based on two basic ideas: the population

diversity increasing and the memorizing previous solutions. As is shown in many studies, there is no universal approach to adapt to all types of changes in the environment. At the same time, real-world problems of non-stationary optimization include various types of changes and are poorly predictable.

We will introduce an approach based on the Self*GA concept. It is called SelfDOPGA. In this study, we will use the following list of 5 basic and well-studied DOP techniques in the ensemble: self-adaptive GA, restarting optimization, local adaptation, diversity increasing technique, and the explicit memory. In the SelfDOPGA, the adaptation period is defined by the period between changes in the environment. The detection of changes can be performed by re-evaluating the fitness of the current best solutions (called detectors). After each adaptation period is completed, we need to estimate the performance of single algorithms. The performance measure is the offline error. The redistribution scheme is random migrations. We do not use the standard scheme "the best displaces the worst" to prevent the convergence and the decrease of the population diversity.

The performance of the SelfDOPGA was investigated at solving the following benchmark problems of non-stationary optimization. Two standard non-stationary optimization problems: the moving peaks benchmark (MPB) and the dynamic Rastrigin function. The MPB uses "Scenario 2" with the number of peaks equal to 1, 5, 10 and 20. The dimension for the Rastrigin problem is equal to 2, 5 and 10. Three problems from the CEC'2009 competition on dynamic optimization: Rotation peak function (F1), Composition of sphere's function (F2) and Composition of Rastrigin's function (F3). The types of changes for F1-F3 are denoted as T1-T6. More details can be found in Sopov [7].

The results of the SelfDOPGA runs are compared with the performance of algorithms from the CEC'09 competition. The algorithms are a self-adaptive differential evolution algorithm (jDE), a clustering particle swarm optimizer (CPSO), Evolutionary Programming with Ensemble of Explicit Memories (EP with EEM), a standard particle swarm optimizer (PSO) and a standard genetic algorithm (GA).

In the case of the F1-F3 problems. The SelfDOPGA outperforms both the GA and PSO algorithms. It also outperforms EP in some cases. But yields to jDE and CPSO. It should be noted that the SelfDOPGA outperforms the average value, and the value of the SelDOPGA performance is closer to the best value than to the average.

CPSO, jDE and EP are specially designed techniques. Numerical experiments show that their performance can decrease for some types of changes. The SelfDOPGA demonstrates sufficiently good performance within the whole range of types of changes.

4.2. Multi-objective optimization problems

Evolutionary multi-objective (MO) optimization is one of the fastest growing fields of research and application. EAs are highly suitable for MO and are flexible and robust in finding an approximation of the Pareto set. At the same time, many MOPs are still a challenge for EA-based techniques.

There exist various MO search strategies, which are implemented in different certain EAs. All of the techniques have their own advantages and disadvantages. Thus there is a good idea to combine different MO search strategies in a form of ensemble and design Self*GA that can be named SelfMOGA. We use five basic and well-studied techniques: VEGA, FFGA, NPGA, NSGA-II, SPEA-II.

We have used the following performance evaluations of a single algorithm. We have used the following criteria, combined into two groups. The first group includes the static criteria (the performance is measured over the current adaptation period):

- Criterion 1 is the percentage of non-dominated solutions. The pool of all algorithm solutions is created and non-dominated sorting is performed. Finally, the number of non-dominated solutions corresponding to each algorithm is counted.
- Criterion 2 is the uniformity (dispersion) of non-dominated solutions. The average variance of distances between individuals is computed using coordinates (for the Pareto set) or criteria (for the Pareto front).

The second group contains the dynamic criteria (the performance is measured in a comparison with previous adaptation periods):

- Criterion 3 is the improvement of non-dominated solutions. The solutions of the previous and current adaptation periods are compared. The improvement is completed if the current solutions dominate the previous ones, even if its number has decreased.

The SelfMOGA performance was investigated using 19 benchmark problems. Problems 1-6 are various 2D test functions based on quadric, Rastrigin, Rosenbrock and others. The number of objectives varies from 2 to 4. These problems are good for analysis of the algorithm performance as we can visualize the Pareto set and the Pareto front. Problems 7-19 are taken from the CEC 2009 competition on MO. The following functions are chosen: FON, POL, KUR, ZDT1-4, ZDT6, F2, F5, F8, UP4, and UP7. More details can be found in Sopov [8].

We have estimated the performance of the SelfMOGA, each component algorithm from the ensemble and the mean value (average of all component algorithms). The mean value demonstrates the average performance of the randomly chosen technique. The SelfMOGA can yield to the best algorithm in some cases, but always outperforms the mean value. So we can recommend the SelfMOGA as an efficient and universal technique for complex MO BBOPs.

4.3. Multi-modal optimization problems

Many real-world problems have more than one optimal solution, or there exists only one global optimum and several local optima in the feasible solution space. Such problems are called multimodal. The goal of multimodal optimization (MMO) is to find all optima (global and local) or a representative subset of all optima.

We will discuss the design of a Self*GA for MMO problems that can be named SelfMMOGA. In this study we use six basic techniques, which are well-studied and discussed, and they can be used with binary representation with no modification. Algorithms are Clearing, Sharing, Clustering, Restricted Tournament Selection (RTS), Deterministic Crowding (DC), and Probabilistic Crowding (PC). More detailed information on the algorithms and their specific parameters are presented in Sopov [9].

For MMO problems performance metrics should estimate how many optima were found and how the population is distributed over the search space. Unfortunately, good performance measures exist only for benchmark MMO problems, which contain knowledge of the optima. Performance measures for black-box MMO problems are still being discussed. In this study, the following criteria are used.

The first measure is called Basin Ratio (BR). The BR calculates the number of covered basins, which have been discovered by the population. It does not require knowledge of optima, but an approximation of basins is used. The second measure is called Sum of Distances to Nearest Neighbour (SDNN). The SDNN penalizes the clustering of solutions. This indicator does not require knowledge of optima and basins. Finally, we combine the BR and the SDNN in an integrated criterion K (sum of BR and SDNN).

To estimate the approach performance, we have used the following list of benchmark problems. Six binary MMO problems, which are based on the unitation functions, and they are massively multimodal and deceptive. Eight real-valued MMO problems are from CEC'2013 Special Session and Competition on Niching Methods for Multimodal Function Optimization. We have denoted the functions in the following way: cecF1-cecF8 and binaryF11-binaryF16.

We also have compared the results on binary problems with Ensemble of niching algorithms (ENA). There is no statistically sufficient difference between SelfMMOGA and ENA. We have also compared the results with the average of 6component algorithms. The average value can be viewed as the average performance of a randomly chosen algorithm. Such an estimate is very useful for black-box optimization problems, because we have no information about problem features and, consequently, about what algorithms to use. If the performance of the SelfMMOGA is better that the average of its component, we can conclude that on average the choice of the SelfMMOGA will be better. The SelfMMOGA always outperforms the average of its stand-alone component algorithms for binary problems.

We have also compared the results of the SelfMMOGA runs with some efficient techniques from the competition on continuous problems. The techniques are DE/nrand/1/bin and Crowding DE/rand/1/bin, N-VMO, dADE/nrand/1, and PNA-NSGAII. The SelfMMOGA shows results comparable with popular and well-studied techniques. It yields to dADE/nrand/1 and N-VMO, but we should note that these algorithms are specially designed for continuous MMO problems, and have taken 2^{nd} and 4^{th} places, respectively, in the CEC competition. At the same time, the SelfMMOGA has very close average values to the best two algorithms, and outperforms PNA-NSGAII,

CrowdingDE and DE, which have taken 7th, 8th and 9th places respectively.

Conclusions and further work

Hyper-heuristic methodologies are fast growing field of evolutionary computation and optimization. Hyper-heuristic methods can be used for automated design of EAs' structure and parameters. The constructive hyper-heuristics can generate new low-level heuristics and meta-algorithms. The selective hyper-heuristics can operate with a predefined list of heuristics. In this study, we have reviewed some results for the proposed approach that is selective hyper-heuristic with online learning. As experiments have shown that the approach is domain-independent and outperforms the random choice of search technique.

In further work, a constructive method based on GP will be proposed and investigated for generating new low-level heuristics, which after that will be included into a selective hyper-heuristic.

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Characteristics of Remuneration Systems of Organizations for Sustainable Human Resource Management: Theoretical Approach

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Abstract

The sustainability is multifaceted phenomenon. Three conceptual approaches of sustainability for human resource management (HRM) are revealed: Sustainable Work Systems, Sustainable Resource Management and Sustainable HRM. The basic research object of Sustainable Work Systems is work intensity, which covers many possible approaches including remuneration systems of organizations. Effective remuneration systems increase performance and contribution of employees by controlling labor cost, motivating employees, involving them into organizational processes. The purpose of this paper is to determine the key characteristics of remuneration systems developing conceptual model of characteristics of remuneration systems. This paper research methodology is based on the scientific literature analysis, synthesis and graphic modelling methods. The findings of the research are conceptually developed model of characteristics of remuneration systems comprising five key remuneration characteristics describing the essence of remuneration systems in organizations. The originality and value of the paper is based of the determined five key remuneration systems characteristics by creating conceptual model, which presents links among remuneration systems characteristics and remuneration systems construct. This developed model creates pre-conditions for deepen research in assessment of remuneration systems and their development. The type of the research is conceptual paper.

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Keywords: remuneration; remuneration system; characteristics of remuneration system, human resource management.

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1. Introduction

The sustainability is multifaceted phenomenon. Despite the fact that sustainability is not new research object to scientific researches still for a long period of time the aspect of environmental protection was inherent to the analysis of sustainability without paying attention to the social dimension of sustainability [1]. Changes in modern technologies, labour markets, demography, increased intensity in economy rivalries, the scarcity of resources challenges with new requirements for the development of society and its components. The notion that the society and its organizations cannot be developed only in the direction of economic qualitative growth is being formed [2]. Organizations seeking for sustainability must reform their systems, processes, functions including human resource management in a way that not only achieving good economic results, but also preserves, restores and develops human resources. Authors like Kramar [3], Jabbour and Santos [4], Ehnert [1] and others raised idea of new approach of sustainable human resource management. Researchers distinguish various conceptual areas of sustainable human resource management: "green" human resource management [5–6], ethic human resource management [7–8], sustainable works systems [9–10], social responsible human resource management [11–12]. The basic research object of sustainable work systems is intensity, which covers many possible approaches including remuneration systems of organizations. Effective remuneration systems increase performance and contribution of employees by controlling labour cost, motivating employees, involving them into organizational processes.

For a long period of time researches of remuneration and remuneration systems haven't covered the dimension of sustainability. It should be stressed out that remuneration issues itself are being researched from different perspectives like financial, legislation, managerial and others. Lots of research has been already executed to cover different perspective of remuneration complexity. For instance authors like G. Milkovich, J. Newman, B. Gerhart [13], J. J. Martocchio [14] and others disclose the structural approach towards remuneration system. Nowadays this aspect becomes more important due to his connection to the measurement of work value. The next perspective of forms of remuneration system has been the most controversial aspect due to the determination of point of view. Authors like Miguel Martinez Lucio [15], Crawley, Swailes and Walsh [16], Holbeche [17], Suff, Reilly, Cox [18] and others suggest a very wide and different ways of approach to this perspective and it is hard to clarify which approach should be chosen as primal. The last approach of pay grading disclosed that there isn't any singular interpretation of grading systems. At this point Armstrong [19], Wilton [20] and others cover only certain grading systems or its parts. Meanwhile it is necessary to note that in a context of sustainability these approaches are not sufficient. Integration of principles of sustainable human resource management into organizational systems determines the necessity of researches of remuneration system from new perspectives identifying essential characteristics of remuneration systems.

Analysis of scientific literature allows distinguishing some key characteristics of remuneration systems. Many authors covers different characteristics as orientation towards remuneration system goals [21–22], the purpose of the remuneration system [13; 23], the formalization of the remuneration system [13; 24], remuneration system orientation towards performance [25–27] and the flexibility of remuneration system [28]. Lack of systematic approach to remuneration system characteristics could lead to the gap of knowledge in sustainable human resource management with remuneration context. This allows–formulating a scientific problem – how characteristics of remuneration system ensure sustainable human resource management?

The purpose of this paper is to determine key characteristics of remuneration systems developing conceptual model of characteristics of remuneration systems. The research methods used: the scientific literature analysis, synthesis and graphic modelling methods. The findings of the research are conceptually developed model of characteristics of remuneration systems comprising five key remuneration system characteristics describing the essence of remuneration systems in organizations.

2. Method

This paper research methodology is based on the analysis and synthesis of scientific literature and graphic modelling methods. The analysis and synthesis of scientific literature enable to describe the concept of remuneration system and characteristics of remuneration systems. The graphic modelling method capacitates to reveal the linkage among sustainable human resource management, characteristics of remuneration system and construct of

remuneration system. Using the results of the paper the instruments for quantitative method of empirical survey can be developed in order to get empirical data for expression of characteristics of remuneration system in organization.

3. Results

3.1. Theoretical background of linkage among sustainable human resource management and remuneration system

Based on Stankevičiūtė [2] research it can be stated that human resource and human resource management is the key to the successful organization. For last 50th year focus on human resource management changed its' essence and went to the strategic level. Authors like Wright, McMahan [29] deepened knowledge on theoretical approach to strategic human resource management and its practice. This strategic human resource management approach comes from the late 80th where authors like Galbraith, Nathanson [30] started implementing strategies to organization structure and process. This strategic aspect covered researches disclosing linkage among human resource management and results of the organization performance [31–32]. This link was extremely popular till 20th century. After this the newest human resource management approach could be identified. According Kramar [3] strategic human resource management evolved acknowledging broader organizational outcome which covers not only financial ones. This led to focus on the human and social outcomes. Organizations became more responsible with the key success element of organization which is human. Hereby organizations human resource management became long-term competitive object to the market which gives a huge advantage in the right way of use. This created a necessity to cover this topic on the theoretical and practical level. Authors like Kramar [3], Jabbour and Santos [4], Ehnert [1] and others raised idea of new approach of sustainable human resource management. Despite the fact that sustainability incorporation into organization processes has been already identified but the need of knowledge of these processes started developing quite late. Sustainable human resource management itself has a lot of perspectives to be researched. Stankevičiūtė [2] revealed that sustainable human resource background could be grounded within two types of prisms. First one is theoretical which covers ideas of challenges to human resource management, organizational performance perspectives and other. Meanwhile second one grounds empirical approach covering future perspectives of human resource management, practical implication of sustainable human resource management and others.

Hereby authors identified two key approaches to remuneration system researches in the context of sustainable human resource management. First one focuses on remuneration system construct from perspectives of sustainable work systems. Given this it should be noted that sustainable human resource management comprises of sustainable work systems, "green" human resource management, ethical human resource management and social responsible human resource management [2]. Therefore authors revealed that remuneration system construct depends on work systems. Second approach states that characteristics of remuneration systems depend on sustainable human resource management principles. Continuing sustainable human resource management principles are being determined as sustainability dimension implemented from the perspective of organization. By combining these two approaches authors determined that sustainable human resource management principles affects sustainable work systems also influencing characteristics of remuneration system. As for the hard element remuneration system construct is one of the key elements of wok systems affected by characteristics of remuneration system.

Authors deepen sustainability approach to remuneration systems as one of the sustainable work system element and ground its dependency to whole sustainable human resource management idea. To sum up authors reveals their approach in Figure 1.

Covering remuneration system characteristics authors use Stankevičiūtė [2] revealed approach of sustainable work systems in conjunction with sustainable human resource management principles. First off all it should be mentioned that principles are based on characteristics and features of actions of organization in human resource management.

Despite the fact that these principles should identify inherent features of human resource management but still there is no consensus among researchers Stankevičiūtė [2]. Given this Stankevičiūtė [2] executed scientific literature analysis and summarized key sustainable human resource management principles. Summarizing authors challenges

themselves in the theoretical modelling method to reveal characteristics of remuneration system through remuneration system construct in the context of sustainable human resource management.

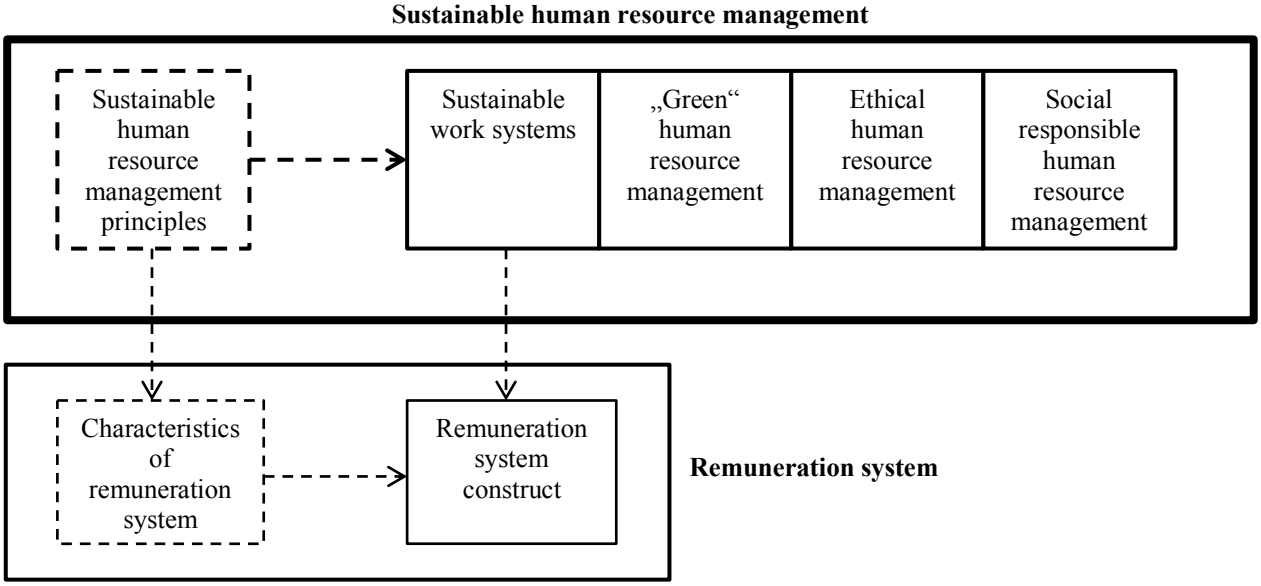

Fig. 1. Linkage among sustainable human resource management and remuneration system

3.2. The concept of remuneration system construct as part of sustainable work systems

Many authors like Becker, Huselid [33] confirm remuneration systems implication into work systems where they state that work systems are generally consist of elements like recruitment, compensation systems, management development, training activities and others. Therefore authors of the article covers only remuneration systems part disclosing remuneration system construct. The systematic and comparative analysis of scientific literature discloses that there is no homogenous agreement on remuneration system construct. Therefore authors developed their remuneration construct which comprises three dimensional approach. All three dimensions were disclosed on longitudinal research on the core essence of remuneration systems. Dimensions are:

- pay structures;
- pay forms;
- pay grades.

The whole remuneration construct is tightly connected to the characteristics of remuneration systems which ensure sustainability in work systems and human resource management.

Pay structural dimension disclosed tight relation to the measurement of performance or contribution [19]. The linkage among sustainable work systems and remuneration system construct has already been presented in 3.1 paragraph. However this pay structural approach focuses on employee performance indicators which support organizational ones through work systems.

In this case structural remuneration system approach as the essence belongs to individual level. Authors like Armstrong and Murlis [24] disclosed influence towards individual pay. Still individual pay depends not only on certain person but still on work essence and relationship among different complexities. For instance working in teams, groups and even higher levels cover companywide interests. Here this kind of multi-level performance measurement has been widely covered by Gonzalez-Roma, Forter- Ferreira, Peiro [34], Margerison, McCann, Davies [35], Kline [36] and others. Authors used this multi-level approach on individual part of remuneration system as core to cover structural dimension. On this purpose, authors used insights towards remuneration system structure of researchers like G. Milkovich, J. Newman, B. Gerhart [13], J. Beardwell and T. Claydon [37], M. Armstrong [19] and others. Different authors suggest different perspective and interpretation of remuneration system

elements. Still analysis of pay structural dimension revealed that there is no homogenous systematic approach towards remuneration systems. It is possible to disclose up to five core remuneration system structure elements [24]. Other authors suggest classifying remuneration system structure only into 2 parts [38]. The main discussion on the pay structural dimension comes from the interpretation of the purpose of remuneration system structure elements. Therefore authors executed comparative analysis of scientific literature disclosing different purposes of remuneration system structure elements. The results of analysis disclosed that in some cases purpose or remuneration system element covers different elements. Therefore authors analysed data and systemized it by grouping remuneration system elements according the key purposes. Final results of elements of remuneration system were grouped in three groups:

- base pay;
- contingent pay;
- employee benefits.

Finally authors created substantiation of each element providing description of the purpose of remuneration system structure elements. All these findings are being presented in the Table 1.

Table 1.The elements of remuneration system structure and their purposes

The elements of remuneration system structure	The purpose of remuneration system structure elements
Base pay	Reward for work content
Contingent pay	Reward for performance, competence or/ and contribution
Employee benefits	Bonuses that could be evaluated by cash pay and cannot be integrated into base or contingent pay

To sum up this table finalizes results from the first dimension of remuneration system construct.

Analysis of dimension of pay forms revealed that it couldn't be determined as clear as structural one. This complexity of difference among pay forms is being raised by different authors. The main problematic lays in different point of view towards forms of pay. Article authors executed another systematic and comparative analysis of the scientific literature disclosing different avenues of approaches. Three main forms of pay were disclosed:

- pay structural [13; 17);
- performance (contribution) related pay [16; 18];
- unitary/ timely pay [15; 39].

Authors like Bun and Huberts [40], Wickramasinghe and Wickramasinghe [41] and others discussed on advantages and disadvantages choosing between forms mention above. Authors determined that nowadays research transformed unitary/ timely pay form into piece-work or time-work forms. Origins of all these three pay forms and comparative analysis of pay forms in general created preconditions for authors to use piece-work and time-work payment methods point of view towards pay forms for purpose to substantiate the second dimension of remuneration system construct (Table 2).

Table 2. Pay forms

	Name	Focus
Pay forms	Piece-work form	On the output of production
	Time-work form	On the executed functions during certain period of time

Summarizing the table above represents the second dimension of remuneration system construct. Pay grades dimension clarification were executed using same systematic and comparative analysis of the scientific literature. In this case only two possible grading approaches have been determined:

- pay structural approach [42–43];
- grading (single or multi level) as separate systemization [14; 19].

Pay structural point of view is being covered by the first dimension of remuneration systems. Based on theoretical background authors declined pay-grading perspective of structural remuneration approach. For this purpose authors clarified only grading systems using different authors' perspective towards it. According Armstrong

[44] there are only two options: either you have pay grading system or not. Hereby pay-grading is being assessed as systematic approach towards whole remuneration system in organization. Pay grading provides a clear framework of remuneration system and implementation of organizations' policies. This enables organization to structure its' job in clear hierarchy. Before clarification of third element of remuneration system construct author revealed five main features that design grading systems. According Armstrong and Cummins [45] they are:

- number of grades, levels or bands;
- pay range spans;
- differentials between pay ranges;
- pay range overlap;
- pay progression.

Using this design approach author executed systematic and comparative analysis of the scientific literature determining possible pay-grading. After the analysis of authors like Dessler [46], Noe, Hollenbeck, Gerhart and Wright [47] and other authors identified eigth pay-grading systems which are multi-graded (narrow-graded), broad-graded, broad-banded, job family, career family, pay spines, spot rates, individual job grades.

Newest practical researches on application of grading had been executed in public sector. Barned, Lyonette, Atfield and Owen [48], Eric. K. K. Abavare [49] and others indicate importance of pay grading in public sector. Still there are not enough case studies on pay grading application in private capital companies. However it is believed that pay-grading is desirable independently to belonging to sector.

To sum up this grading idea is a useful tool to systemize the whole remuneration system and it also helps to plan resources accordingly. It should be stressed out that pay grading is homogenous. It also could be mixed among different grading systems.

All three dimensions covering remuneration system construct is being presented in the new develop remuneration system construct model presented in the Table 3.

Table 3. Remuneration system construct

Pay structure	Base pay
	Contingent pay
	Employee benefits
Pay forms	Piece-work form
	Time-work form
Pay grades	Multi-graded (narrow-graded).
	Broad-graded.
	Broad-banded.
	Job family.
	Career family.
	Pay spines.
	Spot rates.
	Individual job grades.

However it still requires to empirical test and verification of this model due to the fact that model has been developed only on theoretical basis. Still this model might affect sustainable work system construct which is extremely important for sustainable human resource management.

3.3. Characteristics of remuneration systems in the context of sustainable human resource management

Remuneration system construct covered in 3.2 paragraph revealed its connections with sustainable work system. Both systems could be described using features and principles on how it works. For instance sustainable human resource management principles support sustainable work system which is being implemented into organizational processes. As it was already disclosed that remuneration system construct is a part of work system so it implies that similar to sustainable work systems remuneration system construct itself should comprise of remuneration system feature, principles or characteristics (paragraph 3.1 or connection table). The analysis of scientific literature disclosed that there is a knowledge gap in this place. In general different authors use different terms such as parameters, characteristics, principles, and more. Still there is no systematic research which would accurately define

the limits of the remuneration system's characteristics. This knowledge gap raised a new need of disclosure of systematic approach to characteristics of remuneration systems.

For this purpose authors executed scientific literature analysis revealing five key remuneration system characteristics which were systemized and results are being presented in the Table 4.

Table 4. Characteristics of remuneration system

Remuneration system characteristic	Authors
Orientation towards remuneration system goals	Flannery, Hofrichter, Platten [21], Wang, Thornhill, Zhao [22] and others
The purpose of the remuneration system	Milkovich, Newman, Gerhart [13], Martocchio [14] and others
The formalization of the remuneration system	Armstrong [19], Milkovich, Newman, Gerhart [13] and others
Remuneration system orientation towards performance	Biswas [50], Makikangas, Aunola, Seppala, Hakanen [27] and others
The flexibility of remuneration systems	Armstrong [44], Origo [28] and others

These five remuneration system characteristics clearly describe remuneration system construct. First remuneration system characteristic of orientation towards remuneration system goals disclose the position of organization policy towards employee and the expectations of them. This has tight connection to pay schemes which is used in organization. The purpose of remuneration systems reveals the organization expectations (organization strategy) from employees. This case discloses organizational focus which should be supported by remuneration systems. The level of formalization of remunerations system is being assessed as a scale between officially declared remuneration system without possible interpretation and individual pay contracts with lots of space for interpretation. Authors state that all formalization of remuneration systems is tightly connected to the design of remuneration policy which is being implemented into organization strategy. The characteristics of remuneration system orientation towards performance focus on the assessment of employee performance in different levels of organization. For instance authors revealed three key levels where employees' activities are being implemented. Levels are individual, team and company. These levels require certain performance from each employee. Flexibility of remuneration systems discloses organization feature (tool) which allows organization to adjust remuneration systems to certain situation, performance or even necessary needs. Still organizations have different levels of remuneration system flexibilities which could be disclosed by the time gap between intention to change it and occurrence of change.

Summarizing five authors' identified characteristics of remuneration systems are being affected by sustainable human resource management principles. Also all these characteristics form up the remuneration system construct which is tightly connected to sustainable work systems. These findings theoretically covers knowledge gap in identification and systemization of remuneration system characteristics.

3.4. Conceptual model of characteristics of remuneration systems

Theoretical findings on sustainable human resource management (paragraph 3.1), integration of remuneration systems construct into sustainable work systems (paragraph 3.2) and the integration of characteristics of remuneration systems into remuneration system construct in the context of sustainable human resource management (paragraph 3.3) creates background to develop conceptual model (Fig. 2) revealing characteristics of remuneration system influence on remuneration system construct through sustainable work systems in the context of sustainable organization management. This conceptual model reveals that characteristics of remuneration systems have direct effect on remuneration system construct, which is tightly connected to sustainable work systems. The outer wheel discloses the characteristics of remuneration system that affect remuneration system construct. In combination with Fig.1 it could be stated that sustainable human resource management principles are being implemented into remuneration system construct through characteristics of remuneration systems. Also it should be mentioned that hard structure of remuneration system construct is being formed up by sustainable work systems which is directly dependent on sustainable human resource management principles.

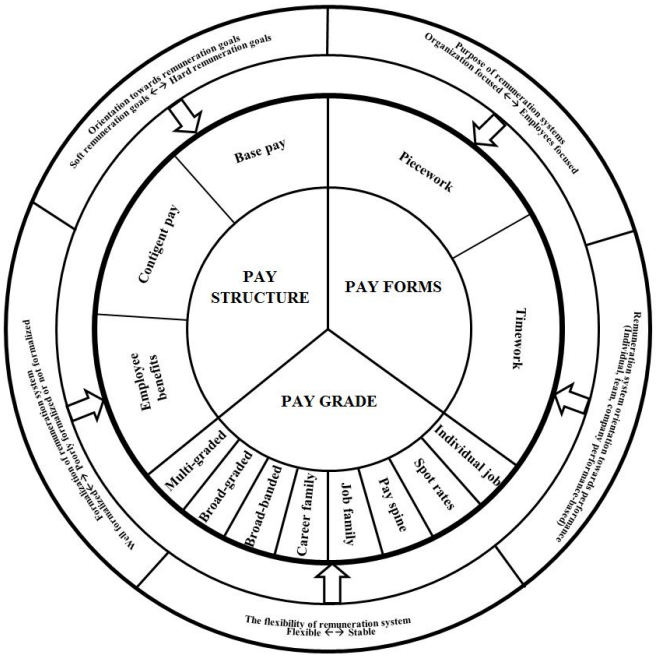

Fig. 2. Conceptual model of characteristics of remuneration systems

This theoretical model challenges researchers to deepen knowledge and implement best practice in sustainable human resource management through remuneration system perspectives. Two new research areas could be identified. First one suggests analyzing the parameters of expression of characteristics of remuneration systems within relation with remuneration system construct. Moreover examining how these characteristics differ depending on the specifics of organizations taken into consideration criterion of organization size, type of economic activity, sectoral dependence and others. Second possible research guideline could be researches of remuneration systems consisting of characteristics and construct in conjunction with organization maturity assessment. This approach allows organization assessing their current situation and plan strategic direction on human resource management.

Conclusions

The paper reveals a new insight in the linkage between sustainable human resource management and remuneration systems in organizations. In the context of sustainable human resource management two approaches to remuneration system researches are very significant: sustainable work systems and sustainable human resource management principles. The basic research object of sustainable work systems is work intensity, which covers remuneration systems of organizations. Integration of sustainable human resource principles to remuneration system determines the need of identification of essential characteristics of remuneration systems. Hereby characteristics of remuneration systems are tightly connected to remuneration system construct which is being influenced by sustainable work systems.

The results suggest some relevant theoretical contributions. Authors revealed the theoretically systemized remuneration system construct which comprises of three detailed elements: pay structure, pay forms and pay grades. In the context of sustainability human resource management principles were identified as characteristics of remuneration systems. Research determined five key characteristics of remuneration systems that affect remuneration systems construct. Characteristics of remuneration systems are orientation towards remuneration system, the purpose of remuneration systems, the level of formalization of remuneration systems, remuneration system orientation towards performance and flexibility of remuneration system.

The findings of the research in the paper are conceptually developed model of characteristics of remuneration systems in organizations. This model reveals only theoretical insights of remuneration characteristics importance on sustainable human resource management. Further research based on the conceptual model of characteristics of remuneration systems in organizations will provide new knowledge on the expression of characteristics of remuneration system under different organizational conditions.

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Indicators System Formation for the Estimation of the Innovation Stability of the Region

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Abstract

The article considers the formation of the criteria and indicators system for the innovation stability estimation at the regional level. The analysis results of the foreign experience and the current Russian practice about the innovation development estimation at the federal and regional levels were the theoretical basis for this study. Based on the approaches studied, the authors proposed a system of criteria and indicators to estimate the level of innovation stability of the region, their threshold values in two fields: criteria and indicators of innovation capacity, criteria and indicators system for the estimation the results of the innovation. The results of the study can be used by the regional government authorities to monitor the state of the innovation sphere in the region and also to correct the existing instruments of the implemented innovation policy. The proposed approach to the estimation the level of innovation stability can be transformed into so-called innovative ecosystems of various types (regional, local, corporate) taking into account the correction of the corresponding system of criteria and indicators.

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Keywords: innovation stability of the region, estimation indicators, threshold values, innovative ecosystem.

1. Introduction

The scientific studies aimed at the development of the mechanisms for the transition to an innovative way of the development and formation of the innovation economy has been implemented in Russia since the 1990s. According

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to some scientists, the peculiarity of the innovation economy is in the ability to ensure the reproduction of social goods on the basis of the production of knowledge-intensive products and services. The transition to an innovation way of development supposes the expansion of the competitive potential of the home economy by increasing its comparative advantages in science, education and high technologies, transformation of innovation, intellect, and creative energy of a man into the main source of economic growth.

The changes take place in different spheres such as in economic, political, scientific, technological, educational, cultural, institutional structures of the state and society in the transformation process to the innovation development way. However, it is impossible to expect the immediate and effective return and a quick solution to the problem only having determined the development strategy. It is necessary to form an entire institutional infrastructure aimed at monitoring and continuous control of the consistent and safe implementation of this transition ensuring stable innovation development since the development of the fundamentally new stage of the economy ("knowledge economy", innovation economy) is a complex, multi-stage process. In the opinion of some authors, the innovation stability can be considered as the peculiarity for the successful innovation development of the social and economic system. In this regard, the problem of the innovation sustainability estimation at various levels (in particular at the regional level) is becoming especially relevant.

2. Methodology

In the opinion of some authors the innovation stability of the regional social and economic system is the ability of the system to generate, within a certain period of time, the creation of the intellectual property objects with their subsequent commercialization into the production sector with the aim to change the structure of industry significantly and to develop new technological structures. The innovation stability reflects the strength and reliability of the elements of the regional innovation system, its dynamic balance, and the ability to withstand internal and external negative impacts.

It is advisable to take as a basis the methodology for the estimation the effectiveness of innovation at the federal and sub-federal levels in order to determine the appropriate indicators and methods system to quantify innovation stability of the region.

In the aspect of international practice the experience of the countries of the European Union and the United States of America is of a great interest. It is presented in more detail in a number of studies by home and foreign authors [1–5]. The peculiarity of the European estimation system is the formation of the indicators system that ultimately are the components of the resulting integral indicator, forming the basis of the European rating system of the innovation activity at the federal level. There is no application of target indicators in most countries of the European continent regarding the estimation at the sub-national level.

The system of quantitative estimation of the innovation development level of territories in the United States of America has its own typical differences. The Department for Economic Development of the US Trade Department is the initiator for the development the special integral indicators of the innovation sphere at the state and regional level. The direct developers are national research centers [3] and specialized structures for the compilation of rating systems [4]. As a rule the elemental structure of the integral indicator is characterized by the combination of both the resource parameters of innovation activity and the results of its effectiveness.

According to I.M. Bortnik's opinion [5], the methodological foundations of the American and European estimation system can be a projection as a basic component in the construction of a system for the estimation the level of innovation in the Russian Federation in the regional context.

A number of author's approaches to the problem of estimation the level of innovation development of the regions of the Russian Federation are given in the works of our researchers [5–12]. As a result of the comparative analysis of the systems for the estimation the level of regional innovation development, a conclusion about the existence of two main approaches in the foreign and home practice has been made. The first approach is based on the formation of indicators of the innovation development that determine the position of the region relative to other regions; the result of this estimation is the development of the rating system. The final indicators of the innovation development level of regional economies as a whole constitute the aggregate estimation based on two main groups of indicators: 1) conditions conducive to the development of the innovation component of the regional economy; 2) results of the innovation effectiveness at the regional level. In connection with the above, the authors propose to form two groups

of indicators for evaluation innovation stability. The first group of indicators is focused on the availability of innovative potential of the territory. The second group of indicators characterizes the results of innovation activity.

Evaluation of innovative indicators in the dynamics is a convenient method to analyze the pace of innovative development of the territory. On the other hand, there are problems of appropriate perception of indicators: how to interpret growth rates, besides to ascertaining the actual state of the presence of a recession or the presence of growth. In the opinion of some authors, the dynamics of innovative indicators in assessing the innovative development of the region in reality can not be the basis for determining the level of innovation stability. This is due to the lack of a certain basis for comparison, the so-called threshold value of the indicator, when compared with which one can assess the actual state of innovation development in the region. Consequently, the dynamics can give an estimate of the pace of development, but not the level of the state of innovation stability.

According to some authors the comparison of actual indicators of innovation development with established benchmark parameters is the most revealing method. But we should take into account the level of innovation stability of the region. Moreover, in terms of ensuring the state of stability, both a compliance with the threshold value and an improvement in the sample of indicators in the dynamics are obligatory. This approach is characterized by greater laboriousness due to the need for the formation of benchmark parameters.

In general, the formation of a system of threshold values has become widespread in determining the level of economic security of the state [13–15]. The lack of a benchmark indicator means the existence of the certain problems (so-called threats) that require the management decision making to improve the level of economic security of the social and economic system.

Thus, relying on the theory of economic security, in the opinion of some authors, it is expedient to determine the criteria and indicators of innovation development at the regional level, as well as their acceptable (benchmark) values, compliance with which gives grounds to assert the existence of the stability of the social and economic system. A correct determination of the quantitative parameters of the threshold values in this case will have a significant effect on the reliability of the estimation results. In this case, the existence of a criterion for the multiplicity of threshold values, differentiated by their filling and specificity, requires practically the same multiple nature of methods to calculate them. Under the impact of a number of factors in each specific economic situation, a list of threshold values, as well as a system of methods for their estimation should be subject to correction.

3. Results

When establishing a sufficient number of estimation factors (indicators) of innovation stability at the regional level and developing threshold norms, a system of quantitative estimation of the innovation stability level of the region can be formed (Table 1).

Table 1. System of criteria and indicators for the estimation the region's innovation stability

Indicator name	Indicator characteristic	Threshold value	Justification of the threshold value
1	2	3	4
	Innovation potential		
Share of investments in fixed assets in GRP,%	It reflects actual investments in the region regardless of the source of financing	not less than 25%	Adaptation of the system of estimation the economic security of the state by Senchagov V.K. [14] at the regional level
Share of home expenditures on research and development in the amount of GRP,%	It reflects the actual costs of performing research and development in the region regardless of the source of funding	not less than 2%	Adaptation of the system of estimation the economic security of the state by Senchagov V.K. [14] at the regional level
Share of employed in R & D in the total number of employed in the region,%	It characterizes the level of science intensity, innovation of companies	not less than 5%	Based on materials [16]

Table 1 (Continued)

Indicator name	Indicator characteristic	Threshold value	Justification of the threshold value
1	2	3	4
Depreciation of fixed assets,%	It characterizes the state of the basic production assets and determines the amount of worn equipment in the total number of fixed assets	not less than 4%	Adaptation of the system of estimation the economic security of the state by Senchagov V. K. [14] at the regional level
	Results of innovation activities		
Volume of innovation products, works, services in the total share of goods shipped,%	It characterizes the effectiveness of innovation development of the region	not less than 15%	Adaptation of the system of estimation the economic security of the state by Senchagov V. K. [14] at the regional level
Share of innovation products in the export of industrial products,%	It characterizes the region's competitiveness in the world market	not less than 15%	Adaptation of the system of estimation the economic security of the state by Senchagov V. K. [14] at the regional level
Number of patents granted for 10,000 people of the population of the region, units	It estimates the effectiveness of the research resource of the region, represents a quantitative measurement of the technological results of scientific research and development in the study region	not less than 6%	Average calculated value for the leading world countries (the G8 countries)
Number of home patent applications for inventions filed in the region, per 10 thousand people of population	Coefficient of inventive activity of regional researchers	not less than 5%	Average estimated value for OECD countries
Share of organizations that implemented technological innovations in the total number of surveyed regional organizations,%	It characterizes the innovative activity of business in the region	not less than 30%	Average estimated value for OECD countries
Ratio of costs for technological innovation and the cost of research and development, the ratio	It is characterized as an indicator of internal innovation transfer	not less than 2%	Based on materials [17]
Ratio of the volume of shipped innovation products and the cost of technological innovation, the ratio	It shows how many innovative products the region produces for each invested unit of the cost of technological innovation.	not less than 5%	Based on materials [17]

* Compiled by the authors on [14,16–19]

The result of this approach will be the estimated deviation of the actual value of the indicator from the established benchmark parameter.

Within the framework of determining the level of innovation stability of the region, the necessary information can be provided when comparing the regions of the Russian Federation, and in this connection it is proposed to use the Data Envelopment Analysis (DEA) method to perform such a comparison [20]. This method has been successfully applied in Russian and international practice to determine the effectiveness of the functioning of homogeneous objects in various social and economic systems. Such objects can be corporate structures, financial and credit institutions, institutions of various fields of activity, government bodies, regions, etc.

The authors propose to adapt the indicators of innovation development to the requirements of the DEA method as follows for selection and justification of the estimation of the innovation stability level of the region. It is suggested to use indicators reflecting the conditions conducive to the development of the region's innovation economy as output parameters, and an indicator characterizing the results of the region's innovation activity as output parameters since innovation stability is realized in the system of close interrelations of the innovation sphere with the economy of the region.

As a result of using the Data Envelopment Analysis method, one integral indicator will be obtained for each region of the Russian Federation surveyed in the sample based on the value of which the ranking can be conducted and, as a consequence, the construction of a special rating system for the regions of the Russian Federation in terms of their innovation stability. In addition, specific estimations are made of the desired changes in inputs/outputs that

would allow inefficient regions to be inferred to the so-called efficiency boundary (here the term "inefficient" in this case means innovative unstable, less favorable situation in terms of stable innovation development).

Conclusion

The system of criteria and indicators to estimate innovation stability proposed by the authors at the regional level is characterized by the existence of an integrated approach – the quantitative estimation procedure is carried out on the basis of a system of criteria and indicators that characterize the level of innovation development of the region. Based on the goals and objectives of the study, a set of indicators used for the estimation can be corrected. At the same time, it is advisable to perform an aggregate estimation on the basis of differentiating the indicators into two aggregated groups: 1) indicators characterizing the conditions conducive to the development of the innovation component of the regional economy; 2) indicators reflecting the results of innovation performance at the regional level.

It is possible to set a different planning horizon for the estimation (short, medium and long term) depending on the scale of the objectives of state authorities at the regional level when carrying out the procedure for the estimation the innovation stability of social and economic systems.

The proposed approach to the estimation of the innovation stability level can be transferred into so-called innovative ecosystems of various types (regional, local, corporate) taking into account the definition of the appropriate system of criteria and indicators, their distribution to input and output (if necessary), and the formation of threshold values for compliance with the basic principles of the methods proposed for use.

The combination of different methods makes it possible to ensure the adequacy of estimation the level of innovation stability at the regional level. As a result, the analysis of estimation results becomes the basis for the development by the regional authorities of a set of measures, mechanisms for ensuring innovation activity and, in general, assumes the making a management decision to implement measures aimed at stable innovation development.

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Methodological Aspects of Criteria for Assessing the Development Level of Cities

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Abstract

The article presents some criteria of assessment living conditions in cities and the level of city's development. On the basis of methodological approach, the criteria are divided into basic factors. Main criteria for city's development level assessment are sustainable development, livability, socio-economic development. The criteria's factors are compared to find similarities and differences. The future assessment could be made on the base of mathematical and statistical models, firstly, assessing the evolution path and then building the possible forecasts of development.

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Keywords: city development, livability, sustainable development, socio-economic development, assessment approach.

Nowadays, modern cities mostly provide full criteria of development' dimensions [17], which made the city's development a huge multi-component system. However, from the full range of city's evolution criteria, economic, social and ecological factors are used in most cases. The modern model of city's complex system of interrelating factors is common. These factors are a proper education, a well-paid job, an available housing, stable economy, strong governance, conservation of the environment, convenient transportation system. The interconnections of elements can be described as people with better education will earn a higher salary that leads to growing income from taxes to a municipal budget that can be spent for transportation systems and pollution control. The

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mechanism's investigation of element's relation is helpful in building the different scenarios of city's development, which can be based, for instance, on the level of city's development. Thus, there is the need for appropriate management of the organization of the complex system of city development.

The assessment of city's development level also seems as a system of special economic, ecological and social factors. Modern foreign scientists provide two types of criteria that can describe the city's condition: sustainable development and livability. Due to some researchers [10, 11, 13, 15], sustainable development is a system satisfying current needs and taking into account needs of future generations with the certain care of the environment. In global way sustainable development built on such criteria as extreme poverty, human capabilities, rich countries participation in the economy, fair distribution, and climate change and biosphere integrity [11].

Other researchers [10, 16] define livability as economic, ecological and social issues that are assumed in a narrow way – the way of citizens. Nonetheless, Gough M. Z. [10] specify community livability as a physical and social characteristics of a place of living, including environment and economic potential in areas of living with certain facilities and range of affordable service that can raise the quality of life. Also, some researchers [12] assume livability as a synonym for a quality of life. Risser et al. [14] define the quality of life as the satisfaction of an individual's value, goals and needs through the actualization of his/her abilities or lifestyle.

In contrast, Russian scientists use the socio-economic development criteria to describe the level of city's development. Socio-economic development can be described as a process that consists of socio-economic goals, in which the main aim is to enhance the quality and level of life [4, 5]. Alternatively, the process of development socio-economic strategy of city can be equal to strategic planning as the process which unites formation of methodic basements and principles, strategic decisions in a way of strategic forecasts, projects and programs, that foresight modern goals and dimensions of city's development, the realization of which provides sustainable functioning in long-term perspective and its practical implementation [6].

It seems that socio-economic development is more extensive, as it includes different projects and programs that can involve different government departments and attract business projects from small and medium enterprises as well as from huge companies. However, the sustainable development based on proactive operations that based, firstly, on the ecological basis and then on economic growth and social stability.

Each of the definitions has its own specific criteria which are used for the assessment the cities' development level. The assessment is used to determine the current step of evolution in the economy, governance, and social stability. Moreover, these indicators can be chosen to build the retrospective way of cities' development. The result is useful for assessing the probable progress in cities and in creation and implementation new directions in social-economic programs.

Cities retrospective provides the line of cities' evolution that can be measured with certain criteria of sustainable development, livability, and socio-economic development. Theoretical basics provide two main methodological approaches to cities development evaluation [1]. The first one is based on the indicators' system, each of which is related to the specific aspects of sustainable development: economic, ecological, social, institutional. The second methodological approach is expected to build the aggregate indicator which is going to be the base for social-economic development measurement. This approach is also used for economic, social and ecological measures.

The specific parameters measuring the city's development level are chosen in accordance with the first methodological approach. Moreover, every parameter has a certain dimension of estimation. The current table of indicators and sub-indicators measuring sustainable development, livability (quality of life) and socio-economic development was constructed on the data from researcher's papers [2–3, 6–9].

Some of the highlighted sub-indicators need previous assessment, for example, economic efficiency and social equity. Due to researcher [9] social equity can be measured using accessibility, which is built on the worker capability and equal work opportunities. In other words, this measure shows the stability of social equity when adjusted with the socio-economic characteristics. Moreover, economic efficiency can be measured by industry and business efficiency, such as accessibility to markets and suppliers [9]. The significant factor could be an entrepreneurial spirit. The specific quantitative indexes could be workforce productivity, return on assets at huge enterprises, the profitability of core enterprises. Moreover, these sub-indicators are used measuring sustainability.

The socio-economic development also requires laying the groundwork before building the assessment model. Preliminary it is needed to collect information using in determination such indexes as demographic situation, the endowment of housing, investment environment, production-technical potential and innovation potential. Therefore,

these indexes are presented without measure (Table 1). For example, investment environment is determined by stable economic growth, low inflation index, stable political situation, low taxes, and low loan interest rate. In its turn, production-technical potential can be measured with a number of people working in the production sector, amount of investments in production, average wage, and industrial output. Innovation potential is also a complex system of related characteristics: some of them are a share of expenses on research and development (R&D), the output of innovation products per capita, patents expenditure share.

Table 1 shows some sub-indicators that are measured in currency, prevent from fixing to exact currency as a theoretical basis, it is used only millions (mm).

Comparing factors of measuring city's development criteria, it is found that the similarity between sustainable development and socio-economic development is closer than between sustainable development and livability. The sub-indicators of sustainable development and socio-economic development are quantitative, while livability's criteria mostly consist of qualitative factors. Economic factors estimate not only economic situation in a city, but also an economic connection to the regional economic system, the indexes relate to different city areas such as transportation, consumption, investments. Ecological factors are aimed at saving the environment, the expenditures on green zones extension and the closeness of natural resources. Social factors comprise a wide range of society's condition: demography, education, public health, expenditures on a worker's education. The group of institutional factors is marked as emerging due to scientific and technological progress.

Table 1. Main parameters of assessment's approaches

1	Sustainable development 2	Livability / Quality of life 3	Socio-economic development 4
Economic	-gross fixed capital formation (mm); -the coefficient of renewal of fixed capital; - cumulative investment in environmental protection (mm); - gross domestic product per inhabitant (RON) (mm); - occupied population per total population (%); - the unemployment rate of total population (%); - number of passengers carried by public transport: trams, buses, microbuses, trolley-buses and underground (mm persons); - accessibility to labor from employment zones (economic efficiency).	- education attainment by workforce (person); - identification of major employers (person); - location of current job centers (km from city centre); - location of dependent care facilities (km from city centre); - location of workforce housing (km from city centre); - unemployment rates.	- openness for SMEs (share of SMEs in all enterprises) (%); - financial potential of the city (percentage of dotation from the regional budget) (%); - investment environment; - industrial output (mm); - contractor's business (mm); - implementation of resident's buildings (sq. m.); - retail turnover (mm); - catering turnover (mm); - fixed capital expenditures (mm); - local government revenue (mm); - local government expenditures (mm); - GDP per capita (mm); - equity contribution to GDP (%); - the coefficient of renewal of capital stock (%); - workforce productivity (mm); - trade balance in goods and services (%); - equity of debts in GNP (%); - inflation rate (%).

Table 1 (Continued)

	Sustainable development	Livability / Quality of life	Socio-economic development
1	2	3	4
Ecological	- extension of space of special protected natural areas (SPNA) (in % of total city area) (sq. km.); - area of SPNA and green areas per capita (sq. km.); - air pollutant emissions from motor vehicles (mgr/m3); - waste quantity generated per year per inhabitant (kg); - SO2 quantity emitted in the atmosphere annually (mgr/m^3); - NO2 quantity emitted in the atmosphere annually (mgr/m^3); - CO quantity emitted in the atmosphere annually (mgr/m^3); - maximum noise measured (dB).	- areas for food production (ha); - air pollution from a fixed source of environmental pollution (kg); - the current cost of environmental protection (mm).	- geographic location, natural resources (km from a central city of a region); - public health (mm); - ecologic pollution (mm); - annual consumption of energy per capita (kW); - energy intensity (kW); - equity of renewable energy sources (%).
Social	- expenditures on human development (mm); - the ratio of urban citizens, living in conditions of high and extremely high air pollution (%); - life expectancy (years); - infant death per 1000 live-birth (%); - number of inhabitants per physician (persons); - abandon rate in pre-university education (%); - population density (person/sq.km); - natural increase rates (%); - living floor per person (sq. m/person); - accessibility to employment from residential zones (social equity).	- allocation of affordable housing stock (km); - demographic information (person); - housing burden or purchase capacity (mm); - percentage hometown ownership (%); - population protection - the proximity of services to residential locations (km); - assessment of hazard exposure; - crime rate, - health status of residents (ration of illnesses to healthy people) (%); - households' proximity to healthy food (km); - location of pedestrian sheds (km).	-demographic situation; - labor market (ratio of the high graduate student) (persons); - science and education (amount of people with Ph.D.) (persons); - municipal and residential sector (ratio of municipal housing to own housing); - sport. tourism, culture, and spiritual and moral environment (expenditures on specific projects and programs) (mm); - youth policy (young people involved in politics); - residential population (person); - unemployment rate (person); - the coefficient of income differentiation (mm); - number of people with cash income below subsistence line (person); - the endowment of a housing; - the proportion of families are in follow-up for housing (person); - children's recreation institution (amount of private and municipal health organizations for summer period).

Table 1 (Continued)

	Sustainable development	Livability / Quality of life	Socio-economic development
1	2	3	4
Institutional	- gross energy expenditures (mm); - electrical capacity (electricity consumption ratio to GRP) (%); - town verdure spots area (ha); - drinking water supply (mill. m^3).	- an alternative choice of transportation (amount of provided transportation); - existing road networks (km); - mobility options for nondrivers (km); - the portion of trips by car, transit, walking or bike (km); - proportion households 1/4 miles from public transit (%); - vehicles miles traveled (km).	- production-technical potential; - innovation potential; - transportation communication (km); - international and regional cooperation (amount of created networks); - number of cars per capita.

Summarizing, the methodological approaches of city development's level assessment have the related measuring factors. Livability's factors measure the quality of life, while sustainable development and socio-economic development are aimed more at expenditures on economic, society and ecology. Some of the assessment factors previously need calculation of related sub-indicators. As the result of the assessment of the development level of cities, the combination of factors can be used as a base for building the mechanism of city's development in future, where the main and dependent factors can be determined. Besides, making the development assessment model it is also needed to impose restrictions. Limits assume the size of a city, the centralization of a city, the type of a city: single-industry city, monocentric city, agglomeration city, metropolis. The single-industry cities can be an industrial city, a science city, a resort city, a port city, an agricultural city. These additional criteria require commensuration of statistical and calculated factors.

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Methods of Calculation of the Coefficient of Housing Affordability in Russia: Problems and Prospects of Use

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Abstract

The article studies methodological problems of housing affordability's assessment. Particular attention is paid to the consideration of modern methods of assessing the availability of residential property, described in native and foreign literature, in official documents. The comparative characteristics of the existing methods, calculations and analysis of housing affordability in the regional context on the example of the Krasnoyarsk territory, as well as the possible reasons for the discrepancy between the results. The groups of stakeholders, their interests and influence in the formation of methodological approaches to assessing the availability of residential real estate. Strategic directions and measures for the development of methods for assessing the availability of residential real estate in the Russian Federation are formulated. The implementation of strategic directions will improve the accuracy of calculations, obtain information on the completeness of the assessment of housing affordability for the population, which will expand the possibilities for analyzing the state of housing problems, as well as develop Federal and regional housing strategies, taking into account the desired structure of the housing stock for different groups of the population.

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Keywords: housing affordability's assessment, comfort of housing, methods of assessing the availability of residential property, calculations and analysis of the housing affordability factor.

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1. Introduction

The housing policy pursued in the Russian Federation is aimed at creating an effective system of housing that meets the requirements of comfort and accessibility for different groups of the population. Comfort and affordability of housing, based on the semantic content of these concepts, is a generalized assessment of its consumer qualities (or suitability) and financial characteristics and therefore this assessment should be carried out simultaneously. Housing affordability combined with comfort is a multi-component indicator.

However, the main criterion in the existing methods of assessing housing affordability is the cost of an average of 1 sq. m. according to the consumer characteristics of the dwelling.

However, it should be noted, that the concept of "comfort of housing", which should be specified in a more appropriate concept "comfort of residential property", is not enshrined in any of the legal documents of the Russian legislation and is not defined as a term. It should be noted that for residential real estate, as the results of the housing construction industry, a number of authors states: "physical and technical essence is not specified, not formed, not expressed by values (parameters). The level of comfort is not formulated, is not described as a standard or a concept" [1]. That is, at the present time, there is a problem of the lack of legal terminology for the classification of residential facilities by the degree of comfort and their relationship with the housing affordability factor. In connection with everything mentioned above, there is a need to develop generally accepted methodological approaches, algorithms and techniques to assess the availability of housing, taking into account the degree of comfort.

The problem of providing of the availability of qualitative and comfortable housing for the population of Russia is becoming increasingly relevant. Attempts were made to resolve this issue due to its great practical significance in some works [2–5]. Members of the team developed a methodological approach, algorithm and methodology for assessing the comfort of residential real estate, based on structuring the levels of formation of the comfort of spatially determined living environment and assessing the degree of comfort for each selected level [3, 5].

According to the selected levels of comfort of the living environment, it is necessary to assess the availability of residential real estate for the population.

The purpose of this study is to identify problems and assess the prospects for the use of methods for calculating the affordability factor, taking into account the degree of comfort of residential real estate, determined by taking into account the regional characteristics of individual territories. The sample for the study was the data of socio-economic indicators including the housing market of the Krasnoyarsk territory.

2. Literature review

Native and foreign authors s offer a variety of approaches to defining and assessing the affordability of housing in the published works on the subject of research [6–37]. The latter is due to the insufficient satisfaction of specialists and experts with the current regular methodology for calculating the housing affordability factor approved by the United Nations urban development organization (UN-HABITAT) [38].

The notion of affordability of housing became common in international practice in the 1980s in order to determine the possibility of its payment by the consumer. The Australian Association National Affordable Housing Summit group defines housing affordability as the ability of low-and middle-income households to purchase standard housing on a sustainable basis that can meet and other basic needs.

The concept of "housing affordability" is not defined in any legislative act of the Russian Federation, but is actively put into practice. Standard methodology variables are used by the Ministry of regional development of the Russian Federation and the Ministry of construction and housing and communal services of the Russian Federation by the formation of housing development Strategy until 2020, target indicators of state programs "Housing", "Affordable housing for citizens of Russia" and other official documents.

Unlike foreign studies [27–29, etc.], which vary the median income of the household, that is, the per capita income of the household and the size of the household and the total price of the apartment, in most domestic works [3, 5, 10–11, etc.], of the four variables, only the average per capita income and the average unit price, and the size of the apartment and the size of the household are left at the level specified in the standard methodology – 54 square meters and 3 people.

Despite the diversity of the author's approaches [3, 5, 10–11, etc.] when formulating the category of housing affordability, most of the common definitions do not correspond to the objectives of the Russian housing policy, the strategic goal of which is to ensure the accessibility of housing for all categories of citizens, not only for people with average incomes, that is, there is a need for the values of the housing affordability ratio for different segments of the population, taking into account the degree of comfort of residential real estate.

Many scientific works are devoted to the calculation and analysis of the housing affordability factor, but for a comprehensive integrated assessment of housing affordability in society, to assess the state of the social environment, it is necessary to analyze this parameter for all income groups within a specific administrative-territorial unit, taking into account the degree of housing comfort.

The authors verified the main methods of assessing the availability of housing, structured levels of formation of the degree of comfort of residential real estate, identified groups of stakeholders and their interests, identified strategic directions for further development of methodological tools for assessing the availability of housing.

3. Methods applied

3.1 Comparative characteristics of methods of calculation of housing affordability index

Table 1 shows a comparison of the most well-known methods of calculation of the coefficient of housing affordability. The calculation of the housing affordability coefficient is made for the Krasnoyarsk region as of 2016. In the calculations the coefficient of housing affordability for the Krasnoyarsk region is 3.3, adopted by the decree of the Government of Krasnoyarsk region №514-P dated 30.09.2013 "On endorsement of state target program of Krasnoyarsk region "Creating the conditions for affordable and comfortable housing for citizens of Krasnoyarsk region"" as amended on 14.12.2016 [39], the remaining calculations were performed by the authors in order to compare the obtained values according to the international methodology adapted for the Russian Federation and the methods of leading scientists.

Table 1. Comparison of methods for calculating the housing affordability factor

The name of the technique	Strengths	Weaknesses	The value of CHA (2016, Krasnoyarsk region)
1. UN-HABITAT [38]	It is international, adapted for the Russian Federation taking into account the housing standard. The possibility of acquiring housing is directly proportional to the median income of the household.	In Russia there are no data on median household income and median prices for residential real estate. Discrepancy of data of bodies of the state statistics and real estate agencies. Does not take into account consumer spending of households; changes in prices for residential real estate; method of saving; dynamics and structure of income of the population; there is no differentiation of housing area/comfort classes.	3,3 [39]
2. Foundation Institute of Economics of the city [40]	Takes into account the availability of loans and grants	Does not account for the complete lack of accumulation of funds from the citizens; the excess of expenditure above the minimum subsistence level; incorrect statistical data on wages.	2,2

Table 1 (Continued)

The name of the technique	Strengths	Weaknesses	The value of CHA (2016, Krasnoyarsk region)
3. S. R. Khachatryan, N. Y. Fairman, N. L. Fedorov, A. N. Kirillov [24]	The following factors are taken into account: the index of accessibility of the population to repay the loan; the possibility of making a down payment; the difference in the value of residential property based on the average of the square; set the level of the minimum income the borrower needed to obtain credit; introduced a coefficient taking into account the payment of tax and payment of housing and communal services; differentiation of population in terms of income.	Does not take into account consumer spending; increase in the value of real estate during the accumulation of down payment, differentiation by class of housing. A fixed number of years of accumulation of funds for the down payment (7 years) is accepted.	5,5
4. D. K. Prazukin, T. Yu. Ovsyannikova, E. Allen and E. Vorzal [25]	We have taken into account the calculation of the period of accumulation of the down payment; method of storage savings, the presence of ownership of finished housing; increase in housing prices. The difference in the cost of residential real estate depending on the average area and ownership of the market (primary/secondary). To account for consumer spending, the average per capita income is reduced by the value of the subsistence minimum.	Consumer spending is expressed only by the amount of the subsistence minimum. There is no differentiation of residential properties by comfort classes.	6,48
5.V. N. Edronova, M. E. Shilov [26]	The transaction costs are taken into account, without which the mortgage lending transaction is impossible; the calculation takes into account the differentiation by region (different income levels of the population).	Consumer spending is expressed only in terms of the subsistence minimum; it does not take into account changes in prices for residential real estate; method of saving; dynamics and structure of income; differentiation of residential real estate by area/class. The complexity of the calculation of transaction costs, lack of reliable information.	9,13
6. G. Sternik, A. A. Apal'kov [10, 11]	It is a prototype technique that takes into account possible modifications	Lack of data required for calculation in official sources (typical for regions); it does not take into account inflation, tax deductions and insurance payments.	4,11(weighted average)

Thus, the values of the affordability factor obtained by the authors in their own calculations are more than those declared in official sources, which once again confirms the failure of the UN-HABITAT Methodology, namely, the discrepancy between the real possibility of buying an average standard apartment (54 sq.m.) by a family of three, but one of the values is less than declared as a comparison base (2.2 according to the method of calculating the affordability factor of housing of the Institute of the City), which is due to a large number of errors in official statistics.

The official statistics of housing conditions of the population at the level of administrative-territorial units are extremely scarce and in fact limited to the indicator of housing provision in square meters per inhabitant of the region and the proportion of dilapidated and dilapidated housing. Quantitative assessment of housing conditions of the population is limited by the indicator of housing provision. The disadvantage of the housing stock is that it is an average indicator that does not reflect the distribution of housing between different categories of the population.

Moreover, it is important to determine the housing conditions of the population taking into account the degree of comfort of residential real estate, determined by levels on the basis of quantitative and qualitative parameters.

3.2 Stakeholders' analysis

Stakeholders should be understood as stakeholders who are interested and able to influence the formation of approaches to the assessment of housing affordability and, as a consequence, the methods used to calculate the housing affordability factor. We will form stakeholder groups in the Table 2.

Table 2. Stakeholder groups and their interests

Stakeholders	Methodology	Interests
The government of the Russian Federation: The Ministry of regional development of the Russian Federation and the Ministry of construction and housing and utilities of the Russian Federation	Methodology UN-HABITAT	Achievement of target indicators and indicators of approved housing priorities of national projects and programmes.
The Federal and regional banking services	The Technique of V. N. Edronovoy, M. E. Shilov; Methodology S. R. Khachatryan, N. Y. Fairman, N. L. Fedorov, A. N. Kirillov	Additional sources of income.
Federal and regional state statistics service	Methodology UN-HABITAT	The data are limited by the indicator of housing provision in square meters per inhabitant and the proportion of dilapidated and emergency housing
Population	Methodology G. Sternik, A. A. Apal'kov	Providing access to quality and comfortable housing for all categories of the population.

Having identified stakeholder groups, it is advisable to determine the extent of their influence. The assessment will be based on two models: the Mitchell Carbohydrate model and the expert assessment. The first method is carried out with the use of 3 directions: power, legitimacy, relevance (Fig. 1).

As a result of the analysis, the following results were obtained:

1. passive stakeholders-Federal and regional state statistics services;
2. demanding stakeholders – the population;
3. dangerous stakeholders-Federal and regional banking services;
4. defining the stakeholders – the government of the Russian Federation and the relevant ministries.

Expert assessments showed that stakeholders - the government of the Russian Federation and relevant ministries-have the highest degree in 3 attributes.

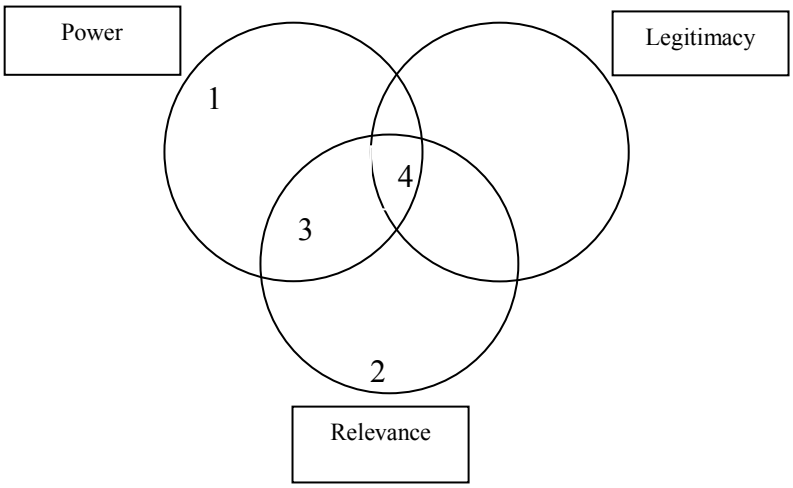

Fig. 1. The degree of influence of stakeholders

4. Result

The solution of the indicated theoretical and methodological problems proves the necessity of developing at the governmental level the appropriate methodological tools adapted to the Russian conditions. The application of the toolkit in the future in the management to assess the degree of comfort and availability of not only investment, but also the performance of the attractiveness of residential properties, will be the mechanism for the improvement of living conditions of individuals and households, which in turn will help to form a living environment that meets current and future requirements of the population to the place and living conditions, which is consistent with the main directions (Table 3), on which the search for ways to optimize the social environment of life and economic activity.

Table 3. Strategic directions of development of the methodology for assessing the availability of residential real estate

№	Destination	Activities	Responsible executor
1	Systematic study and analysis of external and internal factors in a particular region, taking into account their impact on the possibility of purchasing housing. Study the opinions of stakeholders	- analysis and evaluation of macroeconomic factors of the region as drivers of growth of the living environment; - study and analysis of the views of all participants of the real estate market on the comfort classes of residential properties by questioning and public hearings; - calculation of the housing affordability index by country and region according to the approved integrated methodology with the inclusion of the results in the section “Prices and tariffs”, the Russian statistical Yearbook, as well as in the statistical compilation “Regions of Russia”. - analysis of the real estate market for changes in its development trends and factors affecting the opportunity to purchase housing.	Federal state statistics service of the Russian Federation

Table 3 (Continued)

№	Destination	Activities	Responsible executor
2	Effective implementation of the state housing policy	- development of a single classifier (standard) of residential real estate in terms of comfort; - improvement of the state programmes providing comfortable and affordable accommodation for people (revision of the methodological approach to the formation of target indicators for the implementation of program measures); - stimulation of technological development of the construction cluster, including through the development of building standards and rules, the establishment of requirements for capital construction projects and the quality of construction works within the framework of concluded state contracts; - stimulation of the use of new technologies and materials in housing construction, including those that meet the requirements of energy saving; - implementation and dissemination of the practice of contracts that increase the responsibility of contractors for the quality of construction works and materials used, in particular contracts with long-term guarantees, contracts of the "life cycle", etc.; - attracting new developers in the region at the expense of state support - orientation of the vocational education system to the training of specialists to provide qualified personnel of the building cluster.	The Ministry of construction and housing utilities of the Russian Federation; The Ministry of regional development of the Russian Federation Ministry of education of the Russian Federation, Institutions of vocational education and training
3	Establishment of a system of performance and monitoring	- creation of a system of target indicators on the basis of the approved integrated housing affordability methodology, providing monitoring of the dynamics of changes in the housing sector in order to clarify or adjust the tasks and activities.	Ministry of construction, housing and communal services of the Russian Federation Federal Executive bodies, the audit chamber of the Russian Federation Federal state statistics service of the Russian Federation

The results of accurate studies on the accessibility and comfort of housing are of practical importance in the development of housing programs for different social groups. The developed tools are relevant to the use in the development of housing strategy at the Federal and regional level, taking into account the desired structure of the housing stock.

Conclusions

Improving the quality of housing for the population, the reliability and sustainability of life support systems should be ensured and monitored by the state apparatus to a greater extent, only in this case the goals and objectives of housing policy will be achieved. For management reporting can be achieved any easy assessment of housing

affordability by varying the values of the input parameters. However, it is important to monitor whether the estimates obtained are adequate to the real situation. Housing affordability is a comprehensive assessment of the social orientation of the housing market.

One of the strategic goals of "Strategy 2020: a New model of growth – a new social policy" [15] is the formation of social prospects for improving housing conditions for different groups of the population.

Absence of the united adapted toolkit of an assessment of availability of housing, taking into account degree of comfort of objects of residential real estate on levels, on the basis of quantitative and qualitative parameters interferes with formation of adequate system of monitoring of efficiency of FTSP "Dwelling" and the priority national project "Affordable and comfortable housing – to citizens of Russia" [16].

In the framework of solving the identified problems, it is necessary:

Firstly, to develop and then implement housing standards with a focus on different social groups.

Secondly, in determining housing standards the following should be taken into account, the quantitative and qualitative characteristics of the structured levels of formation of the degree of comfort of residential real estate, also into account the interests of all stakeholders and regional characteristics of the territories should be taken into account as well.

Thirdly, to propose a methodology for assessing the availability of residential real estate, taking into account the factor of the level of formation of the degree of comfort and regional characteristics of the territory.

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Cultural Values of Organizations in the Concept of Corporate Social Responsibility

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Abstract

In dynamically changing conditionings of modern enterprises, growing significance of stakeholders, business based on cultural values is becoming a new management paradigm. Profit is a crucial element of every enterpise, but it is a result, not an aim in a proces of creating value. This article tries to answer to, among many others, the following questions:

1. What is the undertow of actions socially responsible in business organizations?
2. What is the role of stakeholders in implementing a socially responsible business?
3. How does a process of incorporating CSR concept into everyday managing take place?
4. What are the relationships between cultural values and CSR values in organisations?

Research presented in the paper is purely teoretical. In the research a method of analysing literature was used. The analysis that was carried out concerned recognizing the state of knowledge regarding relationships existing between elements of organisational culture and a CSR concept. A thesis was advanced that without proper cultural values, actions regarding CSR will have declaratory character only, or they will be a consequence of current gains and losses estimates.

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Keywords: values, organizational culture, CSR.

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1. Introduction

Functioning of organizations on the market has changed significantly over the last decades. Entreprises transformed from simple, based on traditional chains of values business models, with the owner being the executive, focusing on substantial product and a known client, into multinational corporations, with scattered and anonymous stock ownership, with mercenary executive cadre and a global clientele. At the same time, boundaries between business entities and their environment are blurring. These changes and the social pressure put by organizations cause the necessity of imposing strict requirements in regard to monitoring the results of undertaken activity, especially the one of a negative influence. It creates a need of socially responsible actions. Consequently, business organisations increasingly function in compliance with a CSR (Corporate Social Responsibility) conception. It is one of the paradigms present in enterprises' aims. Concerns, pursuing their mission in accord with M. Friedmand's opinion should use your resources and undertake activities to increase your profits as much as it is in accordance with the rules of the market game [1]. Social responsibility understood in that manner does not correspond with the CSR conception comprised in Green Paper European Commission. The document defines social responsibility through the premise that "companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis"*. The difference regarding these two approaches depends on an answer to the question, if enterprises will voluntarily proceed to actions socially responsible, or only when it is profitable business. R. W. Griffin [2] claimes that socially responsible is an enterprise's peculiar obligation to protect and strengthen the sociaty it functions within. The thesis seems to convey the essence of CSR in business organisations best.

Research presented in this paper is theoretical. Its aim was to determine the significance of cultural values in the proces of realising the social notion of business responsibility. In the research the method of analysing literature was used. The analysis concerned recognition the state of knowledge regarding relationships existing between elements of organisation culture and a CSR concept. A thesis was advanced that without proper cultural values, actions regarding CSR will have declaratory character only, or they will be a consequence of current gains and losses estimates.

2. Cultural organization values

Multidirectionality, multidimensionality and interdisciplinarity charaterize research within the scope of organizational culture. To clarify conducted pondering, in the paper organizational culture is defined in accord with E. H. Schein's proposal [3], who understood it as a unit of demeanour rules, values and norms discovered and stated by a group, serving for dealing with problems of inside intergration and outside adaptation, which, thanks to adequate actions, delineate members of organisation's mindset, way of feeling and acting within an organisation. In the definition both adapting (outside) function and intergrating (inside) function is exposed, indicating the possibility to shape it actively, although not determining the scope of possible changes. E. H. Schein also points out values as a basic intergrating medium, giving sense to function in an organization

The most popular cultural organizational mode is depicted as a three-tiered piramid. E. H. Schein [4] distinguished three basic assumptions, values and norms as well as artifacts .The first level is a base on which the culture is created. According to the model's author, when a solution works multiple times, it is assumed to be an axiom. What used to be a hipothesis supported only by a hunch or a value, is gradually starting to be treated as reality. Basic assuptions, in a model sense, become so obvious that one can discern a minor diversification in a social entity. This level of consensus stems from repeated succeses in applying beliefs and values. Culture, as a set of basic premises, defines what to acknowledge, determines how to think, understand, react emotionally to what is happening and what actions to undertake in various situations. The human mind needs a cognitive stability, thus every challenge or questioning a basic assumption releases fear and defence.

Another area in a model of culture by E. H. Schein is values and norms. Value determines something that is

* Europa.eu/rapid/press-release_DOC-01-9_en.pdf, 20.04.2018

worthful and desirable and what states or should state an object of human's aspiration, as well as criterium of his demeanour. Values stem from customary essential assumptions, creating a body of organizational examples. Merits in organizations are the outcome of inside agents specified by a state of mind, motivation, as well as outside culture-making factors. Outside dimension envinced in attitudes of entities and groups within an institution is, as a matter of fact, a manifesto of inside values [5]. Individual merits are a main criterium of aspirations and demeanours, because on the bases of them one defines their preferences regarding desired or undesired means and aims of actions. In social group's case such as organizations it is vital to point out that their members often hold to similar values. People join an institution with merits already shaped and have inclinations to effectuate a designated choice [6]. Values agree then with basic convictions in an organization, forming a core of ruling organizational culture.

Norms, on the other hand, pertain to values which imply their lines, time and situation reference. They often have both instrumental and functional value. Norms consist of social rules of behaviour [7]. Canons can forward both on a formal level as well as informal in the shape of social control. Breaking commonly effective canons encounter manifold kinds of sunctions which evince existing a social mechanizm of control, depending on enforcing norms through appropriate reactions of environment to given behaviours [8]. In a strong organizational culture canons mirror group values. Even though, to gain a deeper level of values and norm, decifer a pattern and correctly forsee future behaviour, we need to fully understand a category of basic assumptions.

Merits and canons indicate the aim of functioning of an organization, kind of morality and criteria of situation assesment. They mould demeanours which are subsequently conveyed in a process of socialization. Merits and canons characterise in bearing smaller or greater load of responsibility, meaning social expectations enunciated as imperative (expressive of a command, entreaty, or exhortation), acquiescence (a principle does not enforce specific behaviour, only allows certain actions) and preferences (indicating a type of demeanour which would be worthy of respect, with reservation of not being required). By the agency of these mechanizms they indicate which demeanours are proper and which will be punished. Their evaluation may be done on a basis of social reactions to given activities evinced from positive and negative sanctions. Merits established in given culture are difficult, yet possible, to change. New trends and processes which emerge in environment; menagement, client and stakeholders pressure, an active proces of learning, increasing social expectations are factors which render that also profound changes in the sphere of convictions and needs and consequently accepted values [9].

The last, the most visible and fully aware level of organizational culture are artifacts. According to E.H. Schein [10] they incorporate all phenomena that are seen, heard and felt when one meets a group of an unknown culture. Artifacts include speak, clothing style, rituals and ceremonies, office decor etc. The level is easily observed, yet not so easily deciphered. There is a symbolic level, its proper understanding is possible only when we know the code. E.H. Schein pointed out that it is particularly dangerous to speculate about deeper cultural assumptions basing solely on artifacts, as the interpretations will inevitably be projections of one's own feelings and reactions. If an observer functions in a group long enough, meanings of the artifacts gradually become clear. Nevertheless, if someone wishes to achieve this level of understanding quicker, one can try to analyse professed values, norms and rules that motivate members of the group.

3. Social Responsibility of Business

The concept of social responsibility of business have a long-standing tradition, the origins of which are sought in philosophical notion of responsibility being a consequence of ascribed economic freedom. Consequently, an entrepreneur exercising economic freedom is at the same time obligated to be responsible. M. Bernatt [11] as a CRS's intellectual undertow indicated the ethics of management. Nevertheless, reasons for a rapid increase of the meaning of actions socially responsible in management practise should be sought in the cusp of the '80s and '90s of the past century. H. Ranägen [12] points out the criticism of cross-border corporations as an example. There were two additional factors significant to the development of socially reponsible business concept: the influence of stakeholders, associated with the change of self-awareness of their roles on functioning of market entities as well as a constant development of new media.

There are plenty of definitions of CSR in the subject matter literature. Moreover, there is no consentaneity

regarding what areas of the social concept of socially responsible business it should cover, and its range is oft adjusted to the needs of venture groups that promote it. D. Votaw [13] claimed, that social business responsibility means something, but not always the same for everyone. For some, it i san idea of legal amenability, for others it means a mode of behaviour socially responible in ethic sense, many people equate it with charitable contribution, whereas for some it is social awareness and responsiveness. D. Matten [14] also mentions the problem of CSR concept's ambiguity. To his mind, except from odium of novelty, one of key reasons of some interpretation chaos is plurality and diversity of actors is the CSR world (corporations, politicians, entities of citizen society, political platforms, such as World Economic Forum and individual countries' governments). These entities strive to influence CSR programs or regulations, either on a national level or through transnational initiatives, an example of which can be white or green papers issued by European Commission. Moreover, a growing numer of consultants, advisors, non-governmental organizations, funds, and finally academic centres, indicates growth of CSR concept significance in business practise.

On the grounds of CSR definitione analysis, A. Dahlsurd [15] distinguished five main definition areas, namely dimensions: economic, ecological, social, stakeholders' and voluntaristic .

Economic dimension regards statements invoked by M. Friedman. He believed that in the name of obligations towards their stakeholders, the sole goal of an enterpreneur is maximining profit. Legal amenability is imposed by the society. It embraces respecting the legal regulations regarding omnifarious acpects of an enterprise's functioning. The society expects from menagers incorporating ethical norms into enterprises. It concerns avoiding undesirable behaviours, acting not only keeping to the letter of law, but also to its spirit. Adherence to law is a minimum, whereas taking actions above the minimum is expextable. Philantropic activity is desirable, regarding actions such as promoting programs in the interest of society (e.g education, health, etc), intergrating into local community, etc. [16]

4. Stakeholders as entities creating organization's values in the CSR concept

Analysing socially responsible activities in an organization a necessity of coordination, cohesion of undertaken initiatives and a possibility of quantifying produced outcomes must be stressed. It is necessary to be able to asses rationality of the CSR actions, both from the point of view of organizational values as well as anticipated by stakeholders.

The theory of organizational stakeholders is probably the most known and influential theory in the area of CSR. The notion of "a stakeholder" appeared in 1960, nevertheless a theoritical context of its employing was devised by R.E Freeman [17]. He drew attention to a necessity of reconceptualization a character of an organization, especially in terms of perception, understanding and management activity. It is expected that organizations in their actions will expand responsibility beyond the traditional area (stakeholders, clients, employees, suppliers), pushing the boundaries to the newly identified net of stakeholders, defined by him as each entity or a person who has or may have an influence on achieving organization's goals. The stakeholder theory is expressed through two key questions [18]: firstly, what is the aim of an organization. It is supposed to encourage managers to articulate common values created by them as well as these which constitue values to main stakeholders. It allows an organization to develop, generate superior profit. Secondly, what obligations the organization has to its stakeholders.

The stakeholder theory indicates that the needs of shareholders cannot be satisfied without fulfilling at least some degree of needs of other stakeholders. In other words, even if satisfying the needs of shareholders is the main goal and significance of the management's actions, other parties have influence on the succes of these actions [19]. R. E. Freeman [20] points out, that despite the fact that the stakeholder theory joined the mainstream of business narrative, one should remember about three mutually related aspects: firstly, none of the stakeholders influences the proces of creating values on their own. All the groups interact continually, forming multidimensional and multifaceted nets of codependence. Some of them are positive, some contrary, and some independent. The managers' task is to identify desirable virtues, their relations and to estimate their significance, so as to optimize virtues in realised business model also in this regard. This is the second aspect. Managers should aim for creating possibly optimal combination of values, sattisfy the needs of stakeholders, without making concessions. Thirdly, R.E. Freeman emphasizes that one should not forget that stakeholders have names, faces, children. Managers often forget, that business is situated in the human kingdom. Organizations are human institutions, "inhabited" by complicated, flesh and blood people.

Most of them do what they do because they have their interest in it, yet the interest is most often defined by their held values. People may also act under the influence of their environment, contrary to the interest of totality, what was shown by the example of Enron.

In 1970 M. Friedman [21] in an article "The Social Responsibility of business is to increase its profits" contradicted to the idea of the social responsibility of business based on the assumption, that „an organization may be responsible". According to the author, it is not an organization that is responsible, but the people in the organization. They are to decide what values in the organization are prevalent and it depends on them whether they are respected. His argumentation was based on the following foundations:

1. Only people can be morally responsible for their actions. Organizations are not people, so one cannot speak about their real moral responsibility.
2. It is manager's duty to act in favour of stakeholders. It is the reason they were appointed and for realization of which they should be accounted. Acting with another object they de facto betray particular responsibility towards the owners, which indicates "stealing" from stakeholders' pockets.
3. Social issues are the state's problem, not the managers. Managers should not and cannot decide upon what is in the society best interest. It is a government's task.

Summing up the forgoing ponderation it worth stressing that the stakeholder theory stems from and is based from the assumption, that the key role in running a business occupy values, which are its immanent part.

5. Stages of implementing CRS concept and organization's values

F. Maon, A. Lindgreen and V. Swaen [22] believe that throughout many years scientists focused on defining the idea of CSR, describing approaches, theories and terminology, which, as stated earlier, are ambiguous and complex. Practical aspects of implementing CSR concept and conditionings, including cultural of this proces were discussed remarkably rarely. Furthermore, despite the fact that it was stated that the changes required to implement and develop CSR demand a fundamental change of organizational culture; organizational analyses and cultural consequences of CSR development remain underdeveloped or just partly discussed in existing models. An organization must be based on values, strive for creating organizational culture which favours openness, does not Focus on its particular self-interest. Modern organizations must effect cultural redefinition of their members' relations and change premises of interaction and cooperation with stakeholders.

In a model proposed by the mentioned authors it is stressed [23] firstly: a deep understanding of moral integrations and cultural evolutions, which is demanded by CSR. The assumption stems from an idea, that the organizational culture shapes context, in which ensues designing, incorporating and realizing their strategy, which in consequence influences CSR's development in an organization. Secondly, through focusing on gradual allowing and including social issues into the proces of decision making and strategies, a model which inextricably joins aims with the stakeholders' postulates is constructed. This way the model gains a strategical dimension for developing CSR (Fig. 1). Values of stakeholders influence organizational reaction to social issues, supporting or precluding the CSR development, forming the main heaver in developing culture supportive of CSR. On a cultural and moral level the CSR development process goes through three main phases: a phase of cultural reluctance of CSR, when CSR is ignored or considered only in categories of restrictions and costs. Cultural phase, during which organizations familiarize themselves with CSR rules. In the cultural phase of settling CSR, when the culture fully incorporates morally based rules of CSR which influence its organizational outcomes. The three different cultural CSR phrases include also particular stages of development, characterised by specific strategic and organizational features. Phase of intolerance CSR covers only the stage of slowing down, cultural phase includes the stage of self control, stage of seeking conformity and stage of seeking capability, whereas phase of settling the CSR culture covers protective stage, strategic stage and transmuting stage.

F. Glauner [24] points out that in order to fully understand a connection between the areas of tangible and intangible values, one should take a closer look at inherent asymmetry i dependance on its dimensions. In what way do the two dimensions influence organizations and what is the role of intangible values in a commertial creation of tangible value?

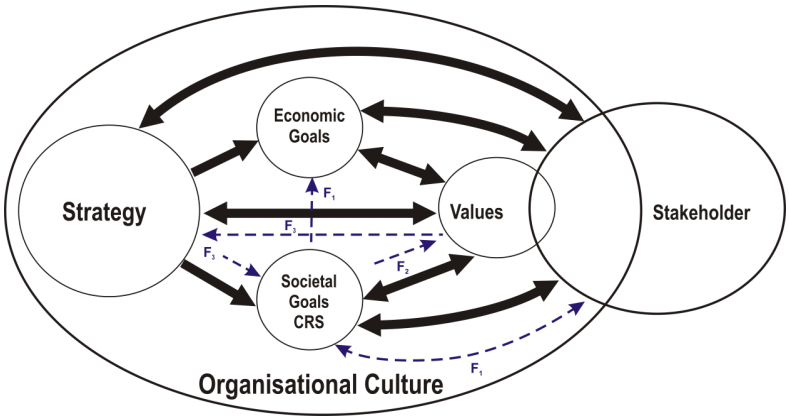

Fig. 1. Cultural CSR context – implementation process. Source: own study

The answer can be found in a view from a cibernetic perspective on internal functioning of an organization. Organizations are complex, living systems, generated from wilingness to fulfill the needs, in someone's interest. This "need" is reflected in their business model, which determines, in what way companies create value. It does not matter whether creating value is understood in one dimension, as pursuit of profit alone, or more holistically, as creating benefits and added value.

Competitivity is achieved through economic cascade of factors fueling the worth in a company (Fig. 2).

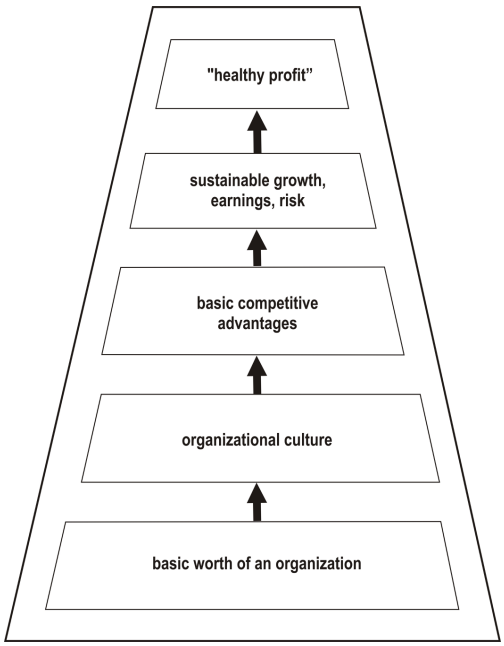

Fig. 2. Pyramid of factors driving value in the organization. Source: own study

To avoid forced leave of the market, a company needs "heathy" profit. The profit is gained through constant, balanced equilibration of growth, gains and risk. Sustainable balance depends on stable competetive advantages. Balanced competetive advantages stem from balanced basic competences, which are basic capabilities of a business model. Balanced basic functions are created and sustained by inimitable, unique and applied culture. Unique and applied culture stems from basic organizational values. The values contitute essential ingredient of the organization fundament and determine its capability to create substantive value.

Managers understand the importance of integrity, trust in business; they are aware that if they do not act profesionally, their clients may leave for the competition. They are aware that if they loose reputation, the functioning of their organization will be threatened. Thus the words such as trust, reputation, integrity and professionalism remind entrepreneurs that doing good things leads to long-term survival and success, even if it may sometimes demand resignation on something which can give big short-term gain, but may breach trust and reputation when unripped. Many managers know what they should do, but they do not know how. They understand the significance of values. They know they are essential. They have their own values, but they do not have the knowledge how they can be implanted and consolidated in the minds of employees. In this context stability and practicality of CSR solutions must result from system of values, norms, basic assumtions effective in the organization, because only under these circumstances it will become a base, a determinant of success in the proces of creating a new business model.

Conclusions and discussions

In the last decades CSR has gradually developed from ideology to reality, and the literature of administration contributed significantly to defining and characterising this phenomenon as well as devising a set of the best practices, assesing an influence on reputation and financial results. The analisys of literature that was conducted indicates a relation between cultural organizational values and realized actions in the field of CSR. The relations is not unambiguous and one-dimensional. Actions undertaken in the field of CSR may be of the same character, regardless of dominating values and the cultural type resulting from them, however the motive of undertaking them and their durability may have distinct source and justification. Some of them will stem directly from a cultural model associated with strategic goald of an organization, and some of them will result from ongoing analysis of costs and gains of undertaking or not actions socially responsible. In the first case CSR actions are characterised by better durability and resistance to negative factors, such as economis crises; futhermore, they create synergistic effect with the organizational strategy. In other case, the action is of business character and an organization easily abandons undertaken actions if current calculation appears infavourably.

In the authors' judgement modern organizations must undertake actions within the scope of business socially responsible, regardless of the motives of their initiation. A global villige which the XXI world became, ubiquitous social media, geometric speed of information diffusion, on one hand growing self-awareness of consumers and on another – their ignorance and superficiality of knowledge, because of which they are prone to be influenced, all of these cause the organizations to reckon with being constantly reviewed by varied groups of stakeholders. Unethical actions may, and, as the market shows, do, cause irreversible or remarkably expensive to repair changes. In order to achieve long-term goals of the enterpreneurs, managers must incorporate CSR values into the basic DNA code of an organization. Internal coherence of organizational values and CSR will alow to achieve long-term effect of synergy and accomplishment of the strategic goals set for the managers.

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Building Sustainable Leadership in Education: Theoretical and Practical Insights

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Abstract

The paper deals with the phenomenon of sustainable leadership in education which is defined as long-term perspective and change oriented leadership which involves different groups of schools community and in shared learning and collaboration based activities aimed for school improvement and continuity of ideas and best practice and creating value for all stakeholders of educational system. It comes with the idea of shared leadership and focus on system – oriented sustainable changes. The practical insights of building sustainable leadership are derived from the qualitative study based on focus group discussions held during the national project on leadership in general education. The content analysis applied allows discerning the meaningful categories of sustainable leadership manifestation in education, to disclose the ways informants perceive this phenomenon and to reveal different levels of impact these targeted activities of leadership development had on the stakeholders of educational system.

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Keywords: sustainable leadership, leadership in education, shared leadership.

1. Introduction

Sustainable development, social responsibility and sustainable leadership are the concepts that recently grab attention of scientists and practitioners and rapidly are developed in the scientific discussions. Despite the fact that sustainability is not a new research object for scientific studies still while analyzing scientific literature it has been

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revealed that many scientists such as Christofi et al. [1], Ferdig [2], Šimanskienė and Župerkienė [3], Benson and Soldo [7], Timo de Haan et al. [8], Avery and Bergsteiner [10], etc., place emphasis on the development of sustainability, especially sustainable leadership, in business organizations without paying attention to the sustainability in educational organizations which is interrelated with social dimension of sustainability. Therefore the need of focus on sustainable leadership in educational context becomes obvious, especially with the focus on learning the leadership skills and striving for the advancement of schools. More that than, there is a number of studies [5, 6, 9, 11], that theoretically substantiate the main characteristics of sustainable leadership in education, but there is a lack of empirical findings that considers it as a phenomenon that is being practically implemented in all the levels of educational system with the active involvement of educational politicians.

The aim of this paper was to reveal the theoretical and practical insights of building the sustainable leadership in education. The research methods used: scientific literature analysis, focus groups, qualitative content analysis method.

2. The concept of sustainable leadership

Before discussing the concept of sustainable leadership, the concept of sustainability will be revealed in this chapter. The World Commission on Environment and Development (WCED) related sustainability to environmental integrity, social equity and economic welfare by defining it as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Christofi et al. [1] note that for the business society the concept of sustainability implies the task to both enhance social and human welfare while minimizing their environmental impact and ensuring the effective accomplishment of organizational objectives [1].

Many researches and practitioners agree that the concept of sustainability embraces three perspectives: environmental, social and economic perspective. *Environmental* perspective of sustainability refers to overall organizations' strategic position to incorporate environmental concerns into their strategic, tactical and operational activities and plans, its culture, business operations, decision-making, etc. The *social* perspective motivates organizations to take under consideration their contribution on the well-being and quality of life of people and communities and refers to activities that go along with educational support, charity, corporate philanthropy, etc. [1]. Other authors [3] note that social perspective reflects the relationship between the development and the predominating social norms and seeks to preserve the stability of social systems, including the assurance of high employment and democratic participation in decision-making, the ability of social networking system to contribute to key demographic and cultural changes, equality between different generations and preservation of cultural diversity. *Economic* perspective of sustainability is related to value creation and improved financial performance of an organization's activities [1]. Šimanskienė and Župerkienė [3] mention that economic sustainability includes the requirements for sufficient and stable economic growth, such as the preservation of economic stability, low and stable inflation rates, the ability to invest, and innovation.

According to Ferdig [2], translating the idea of sustainability to meaningful action implies a dramatic transformation in human perspective and behavior. She notes that we must first acknowledge sustainability challenges, learn their origin and meaning, and then develop appropriate skills and courses of action to meet those challenges. Finding the balance among simultaneous and sometimes contradictory demands of economically, socially, and environmentally sustainable solutions is a compelling *leadership* opportunity [2].

We note that the coherence of two concepts – sustainability and leadership – is widely analyzed in the scientific literature. Christofi et al. [1] even highlight that specific style of leadership, namely sustainable leadership, plays important role in applying sustainability within organizations and successful its adoption in businesses. Moreover, they note that leadership is considered as the solution for almost any problem, regardless of context. This allows us claiming that sustainable leadership plays important role in the educational context as well. Based on this assumption we will continue to analyse the concept of sustainable leadership in educational context.

Sustainable leaders are challenged to display effective leadership in several ways and they must be ready not only to avoid unethical situations, but also to take the right decisions and draw a successful direction for their organizations [1]. Ferdig [2] emphasizes that "anyone can choose to become 'a leader' and take responsibility for fostering sustainable conditions in workplaces, communities and even on a global scale". Also Lambert [6], who

analyses leadership in sustainable schools, states that "everyone has potential and right to work as leader". She claims that leading is skilled and complicated work that every member of the school community can learn.

Christofi et al. [1] seek to describe the concept of leadership for sustainability and in their article they reveal that leadership for sustainability needs the leader with extraordinary abilities, namely such leader can read and foresee through complex issues, can think through complex events, involve groups and individuals in dynamic adaptive organizational change and possess the emotional intelligence to adaptively engage with their own emotions related with solving complex problems. Based on scientific literature analysis Christofi et al. [1] create a unique leadership style, which they call extraordinary sustainable leadership, which, according to the authors, enhances sustainability within organizations.

According to Avrey and Bergsteiner [10], concept *sustainable* does not mean an organization being green and socially responsible. Authors suggest that sustainable leadership requires taking a long-term perspective in making decisions; fostering systemic innovation aimed at increasing customer value; developing a skilled, loyal and highly engaged workforce; and offering quality products, services and solutions. Timo de Haan et al. [8] note that nowadays organizations are in desperate need of sustainable leaders who can balance short-term and long-term priorities and create value for a variety of stakeholders. Therefore, they define the characteristics of sustainable leadership to help organizations identify and recruit leaders with this vital skill set. Authors argue that sustainable leader set strategies and ensure the delivery of results that meet all three perspectives of sustainability, according to the authors, "triple bottom line of social, environmental and financial performance". Further, authors highlight eight behaviors exhibited by sustainable leaders:

- promoting the company's vision;
- operationalizing corporate social responsibility;
- obtaining top management support;
- engaging diverse stakeholders;
- empowering and developing stakeholders;
- communicating with stakeholders;
- measuring performance;
- setting ethical standards [8].

Timo de Haan et al. [8] state that sustainable leader is distinguished from other leadership styles by number of key competencies which authors break down into three main areas:

- Sustainability mind-set – moving from "me" to "we". This aspect highlights that a sustainable leader have a strong interior sense of purpose combined with a long-term orientation and an inherent motivation to meet the triple bottom line.
- Systems thinking – zooming in and out (or in other words, having a strategic outlook) –, which is the intellectual flexibility of a leader to see the bigger picture, as well as to appreciate the details—and to shift perspective between competing interests in order to develop a strategy that inspires all stakeholders. Sustainable leaders can formulate a vision that inspires all stakeholders.
- Relationship building – connecting and collaborating –, which means that sustainable leaders understand people across cultures; embrace diversity; and build productive, long-term relationships with key stakeholders through dialogue (Fig. 1).

It is important to highlight that, according to Timo de Haan et al., a sustainability mindset is the principle and defining aspect of sustainable leadership and that other two above listed aspects are driven by this mindset.

Avery and Bergsteiner [10] highlight that sustainable leadership embraces aspects of humanistic management in that it includes valuing people and considering the organization as a contributor to social well-being. According to Šimanskienė and Župerkienė [3], managers, that seek sustainability, are empathetic; they care for employees, support them, and maintain good emotional relationship with them.

Ferdig [2] highlights that rather than providing all answers, sustainability leaders create opportunities for people to come together and generate their own answers – to explore, to learn, and devise a realistic course of action to address sustainability challenges. Instead of giving direction, sustainability leaders develop and implement actions in collaboration with others, modifying them as needed to adapt to unforeseen changes in the environment over time.

She emphasizes that anyone who takes responsibility or understanding and acting upon complex sustainability challenges qualifies as a 'sustainability leader' whether or not they hold formal leadership position or acknowledged political and social-economic influence. [2].

Fig. 1. Sustainable leadership model from Timo de Haan et al. [8]

According to Lambert [6], "how leadership is defined will determine how people participate". She claims that if only those in formal roles are called leaders, others will not perceive themselves as leaders. This allows us to state that sustainable leadership is distributed, or in other words, shared leadership.

Šimanskienė and Župerkienė [3] claim that the aim of sustainable leadership is to lead an organization and its members towards sustainable development, to implement socially responsible activity, and to use the methods of a socially responsible enterprise. They indicate following methods of maintaining sustainable leadership:

- responsibility for an individual, group, organization, and society;
- reaction to organizational environment;
- employees are loyal to the organization;
- organizational ceremonies, values, stories oriented to sustainability;
- the vision is clear and sustainability-oriented;
- common efforts based on mutual help [3].

These methods, according to the authors [3], lead to sustainable organization, which embraces following features:

- create a system change effort;
- leads to new organizational structure;
- create competence development system;
- create new friendly to environment and society organizational culture value system;
- create good reputation;
- create sustainable relationship.

Cibulskas and Augustanaviciute [5] refer to the features of specific organization, namely sustainable school:

- the process of teaching (learning) is based on active methods of teaching (learning), project activity is performed; moreover, modern means of teaching (learning), the internet, energy saving sources, shifting energy sources are used;
- contents of education meet the conception of sustainable development;
- integration takes an important place in the process of teaching (learning);
- all school community and organizations of another type take part in education of sustainable development as in the process; authors emphasize that in this context collaboration of both educational institutions and organizations of another type (political, non-governmental, business and other ones) is one of the bases of education of sustainable development;
- the nature is 'near' school and there is natural learning and educational environment;
- a rational attitude towards use of various resources is propagated in the school;

- in order to implement goals of sustainable development in the school, an important role is played by the competence of sustainable development by the teachers. Authors emphasize that the teachers improve competences of education of sustainable development.

According to Cibulskas and Augustanaviciute [5], sustainable development is firstly influenced by intellectual and cultural potential of the society. They claim that personal competences to efficiently solve multiply problems of sustainable development are influenced namely by education, therefore, according to the authors, education plays an exceptional role. It is important to mention that contents of education conform to the principles of sustainable development. Moreover, when implementing the principles of education of sustainable development, formal and informal education and self-education is invoked [5].

Lambert [6] highlights that sustainability is a function of leadership and states that sustainable schools are those with high leadership capacity, defined as broad-based, skilful participation in the work of leadership. She claims that leadership in this context mean the reciprocal learning processes that enable participants to construct and negotiate meanings leading to a shared purpose of schooling.

Hargreaves and Fink [9] suggest the following definition of sustainable leadership in the educational context: *"Sustainable leadership matters, spreads and lasts. It is a shared responsibility, that does not unduly deplete human or financial resources, and that cares for and avoids exerting negative damage on the surrounding educational and community environment. Sustainable leadership has an activist engagement with the forces that affect it, and builds an educational environment of organizational diversity that promotes cross-fertilization of good ideas and successful practices in communities of shared learning and development".* Based on this definition authors suggest seven principles of sustainable leadership. They claim that sustainable leadership: 1) creates and preserves sustaining learning, 2) secures success over time, 3) sustains the leadership of others, 4) addresses issues of social justice, 5) develops rather than depletes human and material resources, 6) develops environmental diversity and capacity, and 7) undertakes activist engagement with the environment [9].

Lambert [6] discusses leadership in sustainable schools and highlights that this kind of leadership is about learning that leads to constructive change.

The interrelation of sustainable leadership and change is emphasized also in the article of Hargreaves [4], in which he presents seven principles of sustainability in educational change and leadership:

1) *Sustainable leadership matters*. This principle is leadership for learning and leadership for caring for and among others.

Lambert [6] points the importance of continuous learning; according to her, learning is lasting, continuing facet of sustainability. Moreover, she finds the potential and the reality of sustainable, lasting school improvement, when learning is continuous and participation in that learning is broad-based and skilful [6].

2) *Sustainable leadership lasts*. It preserves and advances the most valuable aspects of life over time, year upon year, from one leader to the next. Author highlights that sustainable development respects, protects, preserves, and renews all that is valuable in the past and learns from it in order to build a better future. Ancient environments, endangered species, cultural traditions, indigenous knowledge and collective memory are defended and preserved because they are valuable in themselves and are also a powerful source of learning and improvement.
3) *Sustainable leadership spreads*; it is distributed leadership, because, according to Hargreaves, in a complex world, no one leader, institution or nation can control everything without help.

Lambert [6] states that democracy clearly defines the rights of individuals to actively participate in the decisions that affect their lives. Consequently, leadership, according to Lambert, is a shared endeavour and school change is collective endeavour; therefore people do this most effectively in the presence with others.

4) *Sustainable leadership does no harm to and actively improves the surrounding environment*. It does not raid the best resources of outstanding students and teachers from neighbouring institutions. It does not prosper at other schools' expense. It does no harm to and actively finds ways to share knowledge and resources with neighbouring schools and the local community. Sustainable leadership is not self-centred; it is socially just.

5) *Sustainable leadership promotes cohesive diversity*. Sustainable leadership fosters and learns from diversity in teaching and learning and moves things forward by creating cohesion and networking among its richly varying components.
6) *Sustainable leadership develops and does not deplete material and human resources*. Sustainable leadership recognises and rewards the organisation's leadership talent in earlier rather than later career. It takes care of its leaders by encouraging them to take care of themselves. It renews people's energy. It does not drain its leaders dry through innovation overload or unrealistic timelines for change. Sustainable leadership is prudent and resourceful leadership that wastes neither its money nor its people.
7) *Sustainable leadership honours and learns from the best of the past to create an even better future*. Amidst the chaos of change, sustainable leadership is steadfast about preserving and renewing its long-standing purposes. Most change theory is change without a past or a memory. Sustainable leadership revisits and revives organisational memories and honours the wisdom of their bearers as a way to learn from, preserve, and then move beyond the best of the past [4].

Summing up we can state that sustainable leadership in educational context embraces several aspects: first, sustainable leaders need to develop values in all the members of school community which will help create a culture of inquiry, change, continuous learning, innovations and shared leadership; second, sustainable leaders need to develop democratic ways of acting so that all educational community create their own goals and help each other to achieve them; third, the sustainable leadership in education is strongly related to the concept of shared leadership and this implies the active involvement into knowledge and experience sharing, helping each other to develop leadership skill needed for school improvement or for a personal development.

3. Manifestation of sustainable leadership in general education schools: the practical insights of project "Times for Leaders"

The sustainability of leadership could be maintained by implementing the political means in all the levels of country's educational system: national, municipal, school and individual. OECD recommends applying the political measures that recognize the achievements of leaders in educational system: to clearly define the responsibilities of leaders, the possibilities to share leadership, to constantly develop leadership skills and to acknowledge leadership as attractive profession at school. The political mechanisms have to support the groups of leaders and not their own individual initiative, to develop system approach to middle level teachers as leaders training and remunerate them for their initiative, active participation and achievements. As Hargreaves and Fink [11] argues, the sustainability in education is ensured by the decisions of leaders and followers to create meaningful and long-term changes that are embedded as positive relationship that do no harm to others now and in the future.

3.1. Research context and methodology

This paper presents the *cases of* three municipalities (Kėdainiai region, Šiauliai City and Prienai region) which have participated in the above mentioned national project "Time for Leaders 2" and implemented the unique leadership development models. The municipalities were selected according to the following two criteria: first, the originality and focus of the leadership model developed by the municipality; second, the results of quantitative study. It means that the case analysis includes the municipalities where school leaders and teachers surveys revealed the high level of leadership for learning. The case analysis method enabled to deeply investigate the sustainable leadership characteristics in education and to explore the nature of changes under the targeted impact of developing the unique models of leadership development in the municipalities.

The model of leadership development in Šiauliai City was related to the developing the system of social competencies in general education schools to foster pupils' creativity, volunteerism skills, and leadership. Kėdainiai region municipality unique model was dedicated to the activities of Leaders' Club which involved all the leader teams from different schools. Prienai region unique model for leadership development was oriented to teachers' creativity and leadership [12].

The search for sustainable leadership indicators in the practice of three municipalities was carried out by means of *focus group method* that enabled to collect unique data depicting the understanding on leadership in education and the experiences obtained in the national project "Times for Leaders 2". 10 focus group discussions were

organized in municipalities of Kėdainiai region, Šiauliai City and Prienai region. The discussions involved the representatives of municipal education departments, school principals and teachers. The detailed characteristics of focus groups samples are presented in the Table 1.

Table 1. The samples of focus groups

Municipality	Teachers	School principals	Municipality representatives
Kėdainiai region	16	5	5
Šiauliai City	7	3	4
Prienai region	30	6	5
Total	53	14	14

The total sample of respondents was 81 people. It included a variety of school types that participated in the project "Time for Leaders 2": secondary school, pro-gymnasium, gymnasium, youth school, special school located both in towns and villages. The focus group participants have a long standing experience: the average length of service is 17 years for school principals, 16 years for municipal representatives and 22 years of pedagogical activity for teacher sample. Some respondents among teachers and municipal representatives were those who had actively participated in the development of municipality leadership models, studied in formal and non-formal leadership groups and those who have never participated in the target activities of the project. Such a variety of experiences and knowledge enabled a constructive dialogue on the meaningfulness of leadership in schools and its sustainability.

The results of qualitative research were processed by applying *qualitative content analysis method* which helped to diagnose the differences between the theoretical characteristics of the phenomenon under investigation and its manifestation in social reality, to disclose the ways respondents perceive this phenomenon. The collected data of focus groups' discussions were processed in this sequence [13]: discerning the meaningful text fragments and their division into components; components coded into explicit categories and subcategories; coding text units into categories and the interpretation of categories' content, the substantiation of study results. In data processing stage each participant received a code with the identification of target group: [ES] stands for municipality specialists or managers in Department of Education; [SP] stands for school principal and [ST] stands for school teacher or principal's deputy for education.

Results and discussion

The content analysis or focus groups' data has enabled to discern four main categories that describes the manifestation of sustainable leadership in education under the target impact of implemented leadership models in different municipalities and the project activities: (1) system approach to leadership in education; (2) shared leadership; (3) supportive (learning friendly) environment for teachers; (4) continuity of leadership and new practice.

The meanings of content of ***"System approach to leadership in education"*** category are revealed in three subcategories: *the change of collaboration culture between school and politicians, system changes for school's improvement and increased cooperation among the schools"* (Table 2). The most significant (28 meaningful contexts) subcategory, according to all informants in all focus groups, is related to the increased quality of cooperation among schools and both municipal level and ministry level officials.

The research [14] agrees that sustainability in educational organizations and the long-perspective improvement have to be acknowledged on political level. The sustainable leadership at school could be strengthened if the educational officials (both at municipal and ministry levels) change the controlling and monitoring manner into partnership and dialogue based collaboration manner. The content of this subcategory reveals that school teachers and principals find the feelings they experience unusual and exited: *"<... >I was surprised and saw him (municipal official) in different light, a very interesting personality, attractive, who knows how to joke... I was surprised" [ST]; "And he talks now with different intonation on the phone. Talks absolutely different, we feel as we are equal" [SP].*

More than that, the informants consider the involvement of politicians very important, since some of them *"<... >were far behind the school reality", "<... >were surprised to know how many problems a school has" [ST].*

The content of subcategory ***"Increased cooperation among the schools"*** clearly indicated that the informants find a great value in increased cooperation between the schools. According to their opinions, the joint activities in the project helped to share knowledge and receive useful advice. The cooperation among schools encourages initiative and shared leadership: *"When to visit each other, to get new ideas and not necessarily make "copy-paste", but apply something and encourage other teachers to share and apply" [SP].* As Hargreaves and Fink [11] assumes, sustainable leadership strengthens the leadership of others, it is expanding, since one institution cannot control everything and system based changes especially.

Table 2. Category "System approach to leadership in education"

Category	Subcategories	Examples of meaningful statements - units	Number of statements
System approach to leadership in education	1. The change of collaboration culture between school and politicians	*"For sure, there is a different culture of cooperation between departments of education and schools" [ES]; "We were used to formal relationship, because the specialists of education departments are controllers or coordinators, and now they started collaborating with people who participated in the project" [SP]; "We even haven't known that people [specialists] have so much initiative and creativity, we just have known them formally before" [ST].*	28
	2. System changes for school's improvement	*"We developed the motivational system for teachers leaders in our school, and it is working" [SP]; "The project had strong influence on relationship: teachers-pupils, teachers – administration, in general the relationship among different groups of community. These relationships influenced the culture of school organization" [ES]; "The schools implemented the self-evaluation reflection based dialogues: teacher-principal, pupil-teacher. With the help of project it became a system. Three-level dialogues with the aim to improve performance quality have strongly come into life" [ES].*	12
	3. Increased cooperation among the schools	*"While participating in the project schools were able to cooperate, to make new contacts, meet in different events, forums, different forms, being together enabled to escape the competitiveness" [ST]; "...we could learn from each other, there is no need to go abroad for training, we have here what we need, but we all work as a closed group" [ES]; "...the experience of our school is known outside the region" [ST].*	16

The subcategory ***"System changes for school's improvement"*** implies that the project activities oriented to developing leadership in schools manifest the sustainable changes that are systematic and long-term oriented. The informants agree that the new procedures, methods or other activities implemented will be practiced or applied permanently, after the project activities finish. And more importantly, these changes have impact not only on a single teacher's practice, but go beyond the school: *"<... > they (school principals) at last understood that they are responsible for the whole system in a city" [ES]; "<... >more freedom, coming out of our subjects, subject integration expanded, "<... > when social partners appeared and their influence on educational process, learning process itself went out of classroom into life, "<... > I mean it becomes closer to real life" [SP].*

The second category ***"Shared leadership"*** is described in four subcategories: *pupil's leadership, teachers' shared leadership, parents' initiative, school principal's shared leadership* (Table 3).

The content of this category revealed that the practice of shared leadership is expanding as a "snow-ball" effect. Teachers mostly motivate pupils for different types of activities and stimulate their leadership oriented to involvement of other pupils.

Table 3. Category "Shared leadership"

Category	Subcategories	Examples of meaningful statements - units	Number of statements
Shared leadership	1. Pupils' leadership	*"This year the group of 20 pupils has participated in different projects: they were active and carried out the events themselves" [ST]; "When we encouraged children for activities, they came to teachers and said: we want to work, give us work" [ST]; "Individual talks with pupils help them to set the goals they have to strive for. These talks motivated a lot" [ST]; "Our school aimed to strengthen pupils' leadership and we carried out the programme "Pupil for a pupil", i.e. pupils with excellent subject knowledge helped other pupils in different forms of consultations" [ST].*	15
	2. Teachers' shared leadership	*"Teachers take responsibility for certain activities, e.g. we develop the system of social competencies. Pupils have to go to companies, to perform some assignments, etc. Teachers take responsibility: I can take them (pupils) there, I know, I do this and that." [SP]; "A teacher became more visible, (he) came out of class, school" [ST]; "<... > teachers very actively share their knowledge, not only by telling, but also by sending the materials they stored…" [SP].*	11
	3. Parents' initiative	*"Parents gave the idea to create the initiative group" [SP]; "The cooperation with parents became more obvious, the Parents Council was established, the active process began" [ST]; "<... > we succeeded in implementing active parents' meetings and parents made presentations, worked in groups, submitted solutions for one or another problem and coming to a common opinion" [SP].*	8
	4. School principal's shared leadership	*"<... > I am very as a principal I can motivate them (teachers) for the activities and observe the process and let them make mistakes sometimes…" [SP]; "<... > the situation has been changing and you see that not only actions, but also person's (school principal's) speech reflect the decision made by the whole community…" [ES]; "<... >the school deputy has changed and now the school deputies are the members of "Times for Leaders" group, because the school principal understood (he) can rely on their experience and knowledge" [ST].*	7

This is a two way process, since school principals indicated that pupils also motivated their teachers for acting. School principals share their leadership with teachers and parents, and most importantly, start noticing the real value of this shared leadership: *"<... > I began to understand that I have to "keep my mouth shut" and let my colleagues to talk, and that everything is okey and I, as a leader, do not have to go crazy, because others took responsibility" [SP]; the school deputy has changed and now the school deputies are the members of "Times for Leaders" group, because the school principal understood (he) can rely on their experience and knowledge" [ST].* This practice could ensure the continuity of new implemented ideas and leadership itself and is perceived as one of the most important indicators of sustainability. The subcategory ***"Parents' initiative"*** indicated that the involvement of parents and encouragement of their leadership mainly is influenced by teachers and principals. As a result of this parents' involvement some concrete results emerged, e.g. Parents' Council, Initiative Group of Parents at gymnasium. More

than that, one school principal remarks that the dialogue between parents and teachers helped to solve the misunderstandings and increased the level of responsibility.

The content analysis of focus group data discerned the third category which complements the category "Shared leadership" and places a significant emphasis on teachers' roles in sustaining the ideas of leadership in education within the school organization. The third category of ***"Supportive (learning friendly) environment for teachers"*** is described in two subcategories: *"Knowledge sharing and acting together" and "Increased responsibility, self-confidence and trust"*. Both of them refer to the internal environment of school organization and as if prove that a lot of new ideas, methods and activities practiced during the project have been "embedded" into the daily practice of school organization.

Table 4. Category "Supportive (learning friendly) environment for teachers"

Category	Subcategories	Examples of meaningful statements - units	Number of statements
Supportive (learning friendly) environment	1. Knowledge sharing and acting together	*"Teachers go for monitoring educational process: not a deputy, but teacher teams <...> they give comments and enjoy the benefits..." [SP]; "The monitoring of lesson is not carried out as teachers' performance evaluation, but they work together instead. [SP]; "They (teachers) develop a lesson plan together. "[SP]; "<...>teams where teachers are members and they make autonomous decisions and then naturally the planned activities are being implemented, when people (teachers) create these activities themselves" [ST].*	13
	2. Increased responsibility, self-confidence and trust	*"Those teachers who were in their "shells", they started „to blossom" [SP]; „People at times did not dare to do, they felt difficulties for expressing themselves, and now their best leadership qualities emerged. And now they take responsibility" [SP]; "It was interesting to observe that those teachers I have never discovered as leaders actively joined the work groups" [SP]; "I think teachers gained more self-confidence. The willingness to try new activities, projects, etc." [ST].*	18

The subcategory ***"Increased responsibility, self-confidence and trust"*** indicates that this practice has an added value for teachers, since the knowledge sharing, joint activities and work in teams at their own schools improved their personal qualities and build the atmosphere of trust within the school organization. The subcategory of ***"Knowledge sharing and acting together"*** revealed that discussions, reflective talks, joint activities, etc. helped teachers to overcome the sense of internal competition, fear for being criticised and increased their potential to make independent decisions that is the essence for shared leadership.

The important indicator of sustainable leadership is a long- term perspective or continuity of ideas and initiatives once started and maintained despite the change or removal of leaders [15]. The content of the category ***"Continuity of leadership and new practice"*** is reflected in two subcategories, one of which received a significant big number of meaningful statements (Table 5).

The sustainable leadership in education is perceived by the informants as the continuity of good practice they were involved during the national project "Times for Leaders" and the unique leadership models they have developed in their own municipalities. A number of informants agreed that the increased cooperation among schools, between schools and municipalities and within the school communities has made a firm background for continuing activities in the future.

It is worth mentioning that the municipal officials were the ones who perceive this continuity with the system approach. As they claim, the good practice should be spread through different levels of educational system, starting from pre-school level. More specifically, the continuity of activities could be ensured more effectively if they are developed as a certain system and embedded as an important element of organizational culture. As the teacher

informant notices, *"<...> teams of leaders are established at schools. But this comes not from the project or necessity. I think it is growing and becomes a norm" [ST]*. This is even a psychological moment of understanding that a person found his meaningful way of life and considers it as sustainable and long-lasting. The school principal informant experiences the feeling of joy with the understanding that his leadership "*<...>is sustainable, and my ideas will survive for sure some time. And it is a great pleasure" [SP]*.

Table 5. Category "Continuity of leadership and new practice"

Category	Subcategories	Examples of meaningful statements - units	Number of statements
Continuity of leadership and new practice	1. Continuity of activities after the project	*"We consider this model (leadership development) is quite flexible, so we plan to activate the institutions of non-formal education into this system" [ES]; "<...>in the future this could be implemented in pre-school level, because everything (the model of leadership development) should start at this level, and this is a work for several years" [ES]; "<...> we have decided, although the project is finished , we do not finish and involve the rest schools" [ES]; "The project is over and the work groups still work, they became stronger, new colleagues joined…and I am happy that it is sustainable, and what is sustainable does not extinguish, [SP].*	22
	2. The need for continuous leadership competence development	*"The continuous training for school principals has to be organized. A principal has to be placed into new theoretical level at least for a half year, to broaden his horizons" [SP]; "<...> the specialists of education departments…have to be prepared as coaches. They have to carry out practical conversations that motivate principals…go forward, search, do, be interested in, create something" [SP].*	3

Despite a small number of meaningful units attributed to the subcategory ***"The need for continuous leadership competence development",*** it becomes crucial in complementing the notion of "continuity" as a main indicator of sustainable practice. The lifelong learning approach and development of leadership competences, according to the informants, should be related to both theory and action (practicing). Along to the mentioned coaching methods, there is a need to have *"<...> deeper discussions on strategies, educational innovations, contemporary learning..." [SP]*.

The empirical findings of this qualitative study meet the main theoretical insights on sustainable leadership in education. First, development of sustainable leadership in education is change-oriented: the changes in collaboration culture between schools and political level as well as among the schools; the system changes for school improvement with the aim to increase pupils learning outcomes, the changes on individual level such as increase of teachers' self-confidence and responsibility, pupils and their parents motivation and initiative for active involvement into school activities. Second, sustainable leadership in education is related to the concept of shared (distributed) leadership, since the joint efforts of all school community members – school principals, teachers, pupils, their parents – make sustainable and lasting school improvement. Third, sustainable leadership in education values a diverse ways for acting and knowledge sharing: discussion, work groups, reflective conversations, and project work. Fourth, the continuity of good practice and leadership expands the boundaries of a single school and is perceived as system based approach for this may ensure long-term improvement.

Conclusions

The concept of sustainable leadership in education is theoretically grounded as the dynamic adaptive change oriented leadership phenomenon which involved different groups of schools community and expands the long-term priorities for school improvement outside a single school organization. It relies on the concept of shared leadership,

builds relationship, values diversity in acting and learning, promotes shared learning and encourages the development of leadership competencies of all persons involved. The sustainability of such kind of leadership in education emphasizes the continuity of ideas and best practice and creating value for all stakeholders of educational system.

The content analysis of the qualitative study in the context of national project which was targeted for developing leadership in general education schools especially revealed the following practical insights on sustainable leadership:

- the sustainable leadership in education leads to different level changes which informants believe to be lasting and sustainable: system level changes: *change in collaboration culture among schools and politicians; system changes for schools improvement; increased collaboration culture among schools;* individual level change*: increased responsibility, self-confidence and trust of teachers; increased motivation and initiative of pupils and their parents; increased trust of school principals;*
- building the sustainable leadership in education highly depends on the idea of shared leadership of all the members of school community – pupils, teachers, school principals and parents. The qualitative study revealed that the strongest manifestation of shared leadership is related to pupils and teachers as they are the main subjects of educational process. Accordingly teacher empowerment for shared leadership is enabled by several sources: knowledge sharing and acting together with colleagues, trust and recognition of school principals and pupils as well;
- The sustainability of leadership in education is perceived as the continuity of leadership and best practice gained during the targeted impact of the project activities and the development of unique leadership models. As study results indicate, the sustainable leadership in education could be maintained by continuous development of leadership skills in a form of non-formal training or coaching.

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Effect of the Students' Satisfaction with Life on Pro-Environmental Behaviour

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Abstract

Students' pro-environmental behaviour and their satisfaction with life was examined by using a sample from one University in Eastern Europe (hereinafter UniX) (N = 423). This study was carried out seeking to determine whether the students' satisfaction with life influences their pro-environmental behaviour. The findings of the study revealed that there is a correlation between satisfaction with life (SWL) and pro-environmental behaviour (PEB) and happier students have some pro-ecological habits. The main factor in acting pro-environmentally is the price of products. Students of UniX tend to choose more convenient pro-environmental actions and are happier with a more comfortable lifestyle. Literature review also suggests a strong correlation between SWL and PEB with many influencing factors for people acting pro-environmentally.

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Keywords: students' pro-environmental behaviour, satisfaction with life, sustainable university.

1. Introduction

Universities have the ability to produce leading innovations concerning not only matters of business but also environmental issues. The discussion about the implementation of sustainability principles and values in higher education has been evolving over the past 20 years, and an increasing number of universities are engaged in this

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implementation process in the most varied ways [1]. By taking actions to raise the students' environmental awareness, universities may impact the increase of students' pro-environmental behaviour (PEB). 'Pro-environmental behaviour' means the type of behaviour that consciously seeks to minimise the negative impact of one's actions on the natural and built world (e.g. minimise the resource and energy consumption, use non-toxic substances, reduce waste) [2]. Even though the concern of sustainability in universities is increasing, there are still many challenges ahead towards a sustainable university. One of the ways to ease the transition concerning sustainability would be to assess the students' satisfaction with life (SWL). Studies of correlations of life satisfaction [3] suggest that positive life satisfaction is linked with positive social interactions, broadened perception and creativity, active involvement in a community and political organisations, fewer physical complaints, and longer lives [4]. Researches have shown that PEB engagement is positively associated with personal wellbeing [5], possibly because assisting the environment may confer similar positive wellbeing effects as engaging in prosocial behaviour towards other people [6–8]. The idea in this research was to assess the correlation between the students' PEB and SWL.

This study takes an example of one the higher education institutions in Eastern Europe (hereinafter UniX). UniX has included the principles of sustainability in its strategy (approved in 2012) and integrated the sustainable development goals of the United Nations (17 SDG). There have been events in the University's past concerning environmental awareness, encouraging academic community to take environmentally friendly actions. Students are also involved in the creation of eco-friendly environment.

Today, UniX's main sustainability campaign is following the five core elements (5P) of 17 SDG programme: people, planet, prosperity, peace, and partnership. The basis for the concept of sustainable development is constructive interaction between the three main components – environment, economy, and society. The 17SDG's aim is to go further to end all forms of poverty. It is a global development strategy focusing on various participants who take bold actions and stimulate change. The bottom line is to take immediate action to steer the world in a sustainable and flexible direction, since implementation is based on a fully-fledged cooperation between the present and future generations. UniX, by applying 17 SDG in its strategy, commits to involve its students in meaningful changes because they represented the generation, which can be named either the first generation to overcome poverty, or the last one having the ability to save the planet.

There are ten principles of the global agreement which concern human rights, workforce, environmental protection, and fight against corruption. One of the main goals of these principles of sustainable development, which is fulfilled by UniX, is #4 Quality education. By conducting studies, research, and managing the University infrastructure, UniX directly contributes to the progress of sustainable development culture and forms a responsible University attitude towards solutions that are relevant to the society, business, region, and environment. Therefore, a purposefully targeted partnership (Goal #17) with business, social and other scientific and non-governmental organisations has a direct influence and value for the region and international partnerships that lead to the solving of regional or global challenges.

Strategic activities and objectives of UniX are meant to concentrate the University's activities for human well-being and sustainable development of the country:

- to develop the University's activities and cooperation with partners in order to achieve unity in terms of value, economic, environmental, social and cultural goals.
- to solve the relevant problems of the city, region and country economy, and social and cultural development while basing on the the sustainable development and knowledge; to educate and consult the society.
- to organise lifelong studies to promote socially and morally fair, ethically acceptable, domestic natural resource-based consumption and economic development for certain social groups.

One of the aims of the study programme management at UniX is to organise lifelong studies aimed at promoting socially and morally fair, ethically acceptable, natural resource-based consumption and economic development for certain social groups.

With a view to successfully implement the priorities of strategic activities related to sustainable development and social responsibility, UniX intends to further introduce and develop the principles of sustainable development in the University, region and country. University's actions toward improving social and environmental atmosphere are stated in the Social Responsibility Report 2013-2014. It includes the University's paper policy, digitalisation of lectures, study material, and student admission. By these actions, the University gives students access to the

information needed for studies and other activities. The use of the virtual study environment grew more than 2 times within one year. This made UniX not only environmentally friendly but also more innovative and attractive to the younger generation.

The University is certain that pro-environmental thinking is bound to become prevalent. A responsible attitude towards environment, saving resources, waste sorting and conscious lifestyle is spreading. The awareness that universities can teach and demonstrate the theory and practice of sustainability through the recognition and reduction of unsustainable impacts of their own activities is also growing in all the higher education sectors. Development of greener culture in a university can have a positive impact on the surrounding environment.

2. Theoretical framework

PEB alone does not lead to good results of lessening energy, food, and other waste. There has to be a whole mind and behaviour set to make change on the global scale. Environmental knowledge, values, and attitudes, together with emotional involvement are seen as making up a complex called 'pro-environmental consciousness' [2]. Environmentally conscious people can spread their knowledge by teaching and acting pro-environmentally. University could become the best environment for the susceptible people who are ready to learn and make a difference. Taking their knowledge to their home, workplace, etc. students could be the best PEB transmitters to the society. In order to become pro-environmental, changes in the mindset are needed because natural eco-thinking is still developing in the society.

Most of the people do not know enough about environmental issues to act in an environmentally responsible way and very detailed technical knowledge does not seem to foster or increase PEB [2,9,10]. Some researches show that in most cases, increases in knowledge and awareness do not lead to PEB as well as more affluence does not lead to more ecological behaviour [2]. People must be emotionally involved in order to take actions toward acting pro-environmentally.

Hines et al. [11] published their Model of Responsible Environmental Behaviour which was based on Ajzen and Fishbein's theory of planned behaviour [12–13]. They did a meta-analysis of 128 PEB research studies and found the following variables associated with responsible PEB: knowledge of issues; knowledge of action strategies; locus of control; attitudes; verbal commitment; and individual sense of responsibility [2]. The university is a great place for a person to get familiar with the environmental problems and assess their own significant impact on the environment. Moreover, subjective beliefs the students hold about the issues that affect their intention and behaviour need to be identified. Only then is it possible to either challenge the beliefs that impede the adoption of the desired behaviour, or strengthen those that support it, or facilitate the development of new beliefs that promote the desired behaviour [14]. According to the theory of planned behaviour, intentions to engage in eco-friendly behaviour and perceived behavioural control are the immediate antecedents of PEB.

Behavioural changes can include a variety of PEBs, such as shifting consumption patterns to relatively low-impact alternatives (e. g., buying a more efficient gasoline car or switching to an electric car) and decreasing overall consumption [6,15,16]. This study is aimed at examining the students' PEB and habits. There seem to be many more factors that influence PEB. Hines et al. [11] called these 'situational factors', which include economic constraints, social pressures, and opportunities to choose different actions [2]. One of the key factors of students acting pro-environmentally is their general SWL. By being happy and having their physical and social needs met, students can start thinking about the surrounding environment.

In research by Eigner [17] and Sohr [18], it is suggested that personal wellbeing can be enhanced by involvement in environmental activism. The most important sources of life satisfaction are nonmaterial in nature [2, 19]. Universities offer great opportunities to become involved in the environmental activities. Students of technical sciences have environmental subjects included in their study programmes. Students of social and human sciences should also have the opportunity to take part in environmental studies. By becoming more aware of the environmental problems, students can ascertain themselves that the pursuit of happiness does not appear to require consumption-based, environmentally damaging activity [20].

Methods

A questionnaire was developed following the scientific literature about pro-environmental behaviour and research into recycling, and was partly based on a questionnaire previously used to observe how individual values influence their purchase intention of electric vehicles [21].

The survey was divided into three sections: the first sought to determine the students' pro-environmental behaviour; the second aimed at revealing the subjects' SWL; while the third section analysed the respondents' demography.

The content of each section is provided below:

1. *Personal pro-environmental behaviour/environmental orientation* – for example, the frequency of recycling at home/at the university, buying ecological products, conserving energy and water, taking public transport. The first set of questions included a list of 45 environmental actions (16 items taken from Corraliza & Berenguer [22]). Each behaviour was rated from 1 (never) to 4 (always). This scale's purpose was to evaluate the students' pro-environmental behaviour in everyday life and in university.
2. *The satisfaction with life scale (SWLS)* (Diener et al. [23]). The SWLS is intended to assess an individual's global judgment of their life satisfaction. The importance of maintaining positive levels of subjective wellbeing has been articulated by researchers. Each statement was rated from 1 (absolutely disagree) to 5 (absolutely agree).
3. *Demographic information* – age, sex, study cycle, faculty.

Data were gathered from UniX students using a structured questionnaire. The questionnaires were prepared in a paper form and printed on recycled paper. Prior to distributing the questionnaires, a pretesting procedure was conducted with seven people (two students, two green campus experts and three university teachers). The survey was carried out in 2017.

The total sample consisted of 423 students of UniX. Statistically, the sample size was representative of the population with 5 % standard error and 95 % confidence level. Most participants were studying in a Bachelor study cycle (71 %), 18–22 years old (69 %), and mainly students in School of Economics and Business (53 %). Most of them does not live in the university's dormitories (53 %). Fifty-six per cent of respondents are female and 44 % are male.

SPSS 22.0 for Windows was used to process the collected data. The internal consistency and reliability of the questionnaire developed and piloted for this study was tested with Cronbach's alpha resulting in a level of statistical significance of $\alpha = 0.05$. The Cronbach alpha's values of the instrument were 0.461–0.929 (Table 1). The results shown in the Table 1 were clustered according to the factor analysis carried in SPSS 22.0.

Table 1: Statistical Information about the Instrument

Items	Stand. Loadings	Reliability	Mean	Standard deviation
Satisfaction with life (Satisfaction)		***0.848***	***3.598***	***0.818***
In most ways, my life is close to my ideal	0.793			
The conditions of my life are excellent	0.810			
I am satisfied with my life	0.871			
So far I have gotten the important things I want in life	0.761			
If I could live my life over, I would change almost nothing	0.704			
Electricity and water conservation		***0.780***	***2.851***	***0.506***
I always conserve electrical energy	0.724			
I switch off the light when I leave	0.714			
I save water when I wash dishes	0.615			
I save water in a bathroom	0.575			
I reuse packages (water bottles, boxes)	0.541			
I don't keep electronic equipment in a stand-by regime	0.537			
I avoid unnecessary packaging (e.g. extra plastic bags)	0.525			
I insulate windows and doors to reduce heat loss	0.384			

Table 1 (Continued)

Items	Stand. Loadings	Reliability	Mean	Standard deviation
Recycling at the university		***0.929***	***2.304***	***0.989***
I recycle paper at the university	0.893			
I recycle plastic at the university	0.871			
I recycle glass at the university	0.863			
Recycling at home		***0.917***	***2.595***	***1.004***
I recycle paper at home	0.883			
I recycle glass at home	0.868			
I recycle plastic at home	0.857			
Choice of packaging		***0.674***	***2.326***	***0.500***
Markings (environmental, eco, trade)	0.771			
I buy ecological products	0.643			
Packaging (ecological, recycled, reusable)	0.603			
Origin of product (distance from home)	0.567			
Composition of the product	0.556			
Zero emission traveling		***0.471***	***2.798***	***0.629***
I reach destinations by public transport	0.834			
I reach destinations on foot	0.599			
Pro-ecological actions		***0.618***	***1.872***	***0.473***
I take part in environment cleaning campaigns	0.781			
I encourage my friends to contribute to the protection of the environment in their daily activities (sorting waste, saving energy and other resources, using public transport, etc.)	0.572			
I buy electronic products from recycled materials	0.387			
I submit medicinal waste (obsolete medicines) to pharmacies	0.345			
I reach destinations by bike	0.317			
Buying of eco-friendly electronics		***0.776***	***2.884***	***0.717***
I buy energy-efficient equipment	0.798			
I buy energy-saving light bulbs	0.797			
Ecological habits		***0.525***	***2.432***	***0.446***
I compost biodegradable waste	0.668			
I choose recycled packaging made from recycled materials	0.516			
I co-operate while driving by car	0.435			
I try to fix faulty devices or other products instead of buying new ones right away	0.399			
I drive at 90 km/h because I want to save fuel	0.339			
I consume all the food I buy	0.195			
Food wasting		***0.640***	***2.251***	***0.638***
I do not appreciate the amount of food needed and then throw some of it away	-0.819			
I throw leftover food away	-0.605			
Recycling of electronics		***0.700***	***2.519***	***0.823***
I deliver discharged batteries to bins for batteries and accumulators	0.679			
I deliver obsolete electrical and electronic equipment for recycling	0.644			
Heat saving		***0.635***	***2.261***	***0.794***
When I am not in the living quarters, I decrease the heating temperature	0.817			
I wear warm clothes to reduce heating costs	0.567			
Pricing		***0.692***	***3.237***	***0.523***
Discount	0.823			
Price	0.818			
Food saving		***0.461***	***2.072***	***0.541***
I freeze my leftovers	0.726			
I eat my leftovers the next day	0.538			
I give my leftovers to someone else	0.477			

3. Results

Results in the Table 2 represent the distribution of PEB and SWL between females and males. By comparing the means of each factor, it can be seen that the most important aspects in students' environmental activities are pricing, electricity and water saving as well as recycling. The distribution of results demonstrates that students have limited income and therefore tend to save. Importance of food and heat saving, acting pro-ecologically is not high and could

suggest that students are not as emotionally involved in sustainability as they are economically. Female students are more environmentally aware and tend to act more environmentally friendly. Moreover, females have higher SWL.

Table 2: Pro-environmental Behaviour and Satisfaction with Life by Sex

		Pricing	Electricity and water conservation	Buying of eco-friendly electronics	Zero-emission traveling	Recycling at home	Recycling of electronics	Ecological habits	Choice of packaging	Recycling at the university	Food wasting	Heat saving	Food saving	Pro ecological actions	SWL
Females	Mean	**3.270**	2.958	2.952	2.860	2.731	2.495	2.400	2.363	2.323	2.302	2.236	2.114	1.871	3.756
	Std. Deviation	0.513	0.491	0.686	0.601	1.019	0.826	0.421	0.473	0.982	0.629	0.805	0.484	0.462	0.764
Males	Mean	**3.194**	2.706	2.799	2.717	2.414	2.549	2.474	2.272	2.281	2.184	2.291	2.019	1.873	3.386
	Std. Deviation	0.534	0.491	0.747	0.656	0.957	0.821	0.474	0.532	0.999	0.646	0.781	0.602	0.489	0.841

Students are relatively happy (mean = 3.592) and their happiness does not depend on their age. Price stays the most important factor for the majority of respondents until the age of 30. As shown in the Table 3, students over 30 prefer buying eco-friendly electronics and recycling at home over pricing. Respondents over 30 years tend to choose comfortability but have a higher sense of responsibility in PEB. Students under 30 focus on saving money, older respondents contribute to the environment more. It can be said that mature students develop a mindset of PEB. University might have an impact in developing the students' environmental consciousness. It can be seen as an increase of importance in choice of packaging, buying of eco-friendly products, recycling, and pro-ecological actions for older students. Such hypotheses should be confirmed with further research. De Leeuw et al. [14] in their study have stated that there are significant sex differences documented, with women generally reporting greater eco-friendly intentions and behaviour than men (e.g., [24–27]), while other studies (e.g., [28–31]) have found no sex differences.

Table 3: Pro-environmental Behaviour and Satisfaction with Life by Age

		Pricing	Zero - emission traveling	Electricity and water conservation	Buying of eco-friendly electronics	Recycling at home	Ecological habits	Recycling of electronics	Recycling at the university	Choice of packaging	Heat saving	Food wasting	Food saving	Pro ecological actions	SWL
18-22	Mean	**3.275**	2.886	2.863	2.813	2.618	2.476	2.461	2.398	2.337	2.317	2.247	2.094	1.885	3.615
	Std. Deviation	0.528	0.554	0.512	0.727	0.985	0.444	0.811	0.966	0.506	0.782	0.628	0.534	0.472	0.828
23-30	Mean	**3.187**	2.652	2.823	3.032	2.477	2.340	2.620	2.077	2.279	2.130	2.283	2.021	1.831	3.548
	Std. Deviation	0.511	0.732	0.494	0.701	1.047	0.444	0.848	0.999	0.500	0.815	0.663	0.576	0.483	0.820
>30	Mean	2.906	2.200	2.824	**3.063**	3.042	2.308	2.833	2.133	2.440	2.133	2.094	2.022	1.933	3.613
	Std. Deviation	0.375	0.649	0.502	0.443	0.926	0.407	0.772	1.125	0.364	0.790	0.664	0.367	0.436	0.635

Students who live in university's dormitories are less happy (mean = 3.467) than students living with their parents or by themselves (mean = 3.707). Such result shown in the Table 4 could have been caused by the emotional attachment to the known environment and the feeling of comfort. Students who do not live in dormitories also give

higher priority to buying eco-friendly electronics, water and electricity saving, but tend to choose more comfortable and less sustainable traveling and food consuming behaviours. Even though students who live in dormitories have greater access to the university's information and events on sustainability, no great impact is reflected in the survey results.

Table 4: Pro-environmental Behaviour and Satisfaction with Life When Living in a Dormitory

		Pricing	Buying of eco-friendly electronics	Electricity and water conservation	Zero-emission traveling	Recycling at home	Recycling of electronics	Ecological habits	Choice of packaging	Food wasting	Heat saving	Recycling at the university	Food saving	Pro ecological actions	SWL
Not living	Mean	**3.199**	3.017	2.914	2.684	2.600	2.542	2.388	2.382	2.301	2.254	2.212	2.041	1.870	3.707
	Std. Deviation	0.517	0.685	0.520	0.658	1.046	0.885	0.426	0.522	0.667	0.790	1.019	0.493	0.484	0.777
Living	Mean	**3.280**	2.735	2.777	2.922	2.589	2.486	2.485	2.260	2.195	2.271	2.405	2.106	1.876	3.467
	Std. Deviation	0.529	0.726	0.482	0.573	0.960	0.744	0.464	0.463	0.603	0.803	0.948	0.590	0.462	0.851

Pricing is the main factor for students of the 1st and 2nd study cycles. Doctorate students care more about buying of eco-friendly electronics (mean = 3.000). This can be linked with the age, which showed a similar tendency. As seen in the Table 5, there is no significant difference between the happiness of students from different study cycles. Furthermore, there are no major differences between pro-ecological actions comparing study cycle groups, although students of the 1st cycle tend to recycle at home and at the university and save heat more than the 2nd cycle students.

Table 5: Pro-environmental Behaviour and Satisfaction with Life by Study Cycle

		Pricing	Zero-emission traveling	Electricity and water conservation	Buying of eco-friendly electronics	Recycling at home	Ecological habits	Recycling of electronics	Recycling at the university	Choice of packaging	Heat saving	Food wasting	Food saving	Pro ecological actions	SWL
1st	Mean	3.279	2.864	2.841	2.822	2.652	2.473	2.446	2.393	2.335	2.304	2.233	2.095	1.865	3.596
	Std. Deviation	0.534	0.580	0.517	0.728	0.983	0.453	0.818	0.969	0.505	0.802	0.645	0.541	0.471	0.838
2nd	Mean	3.150	2.637	2.896	3.031	2.454	2.356	2.700	2.075	2.312	2.160	2.295	2.015	1.874	3.598
	Std. Deviation	0.479	0.706	0.479	0.686	1.047	0.412	0.816	1.011	0.499	0.781	0.627	0.526	0.483	0.769
3rd	Mean	2.833	2.250	2.214	3.000	1.833	1.333	2.667	2.333	2.067	2.167	2.167	2.222	2.100	3.333
	Std. Deviation	0.764	1.768	0.303	0.500	1.179		0.764	1.155	0.115	0.764	0.764	1.018	0.141	1.155

Seeking to examine the connection between students' SWL and their PEB, bivariate correlations were calculated. Results in the Table 6 indicate that there is a significant correlation between recycling at home and at the university, choice of packaging and pro-ecological actions. There is a weak correlation between PEB and SWL. A growing number of research indicates that humans experience greater subjective wellbeing after engaging in prosocial behaviour [6, 32]. Interestingly, the happier the students are, the more likely they are to waste food. Students who

are more satisfied with life tend to recycle at the university and buy eco-friendly electronics. Zero-emission traveling results in lower satisfaction in life. Students can be described as environmentally aware but preferring comfortable choices.

Table 6. Correlations for Satisfaction with Life and Pro-Environmental Behaviour

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Electricity and water conservation	1.000	0.168**	0.275**	0.272**	0.215**	0.322**	0.349**	0.395**	-0.255**	0.241**	0.365**	0.188**	0.231**	-0.018
2. Recycling at the university		1.000	0.417**	0.249**	0.113*	0.304**	0.185**	0.295**	0.002	0.296**	0.217**	0.049	0.175**	0.116*
3. Recycling at home			1.000	0.288**	0.056	0.316**	0.194**	0.355**	-0.136**	0.344**	0.207**	0.018	0.228**	0.057
4. Choice of packaging				1.000	0.041	0.442**	0.220**	0.201**	0.030	0.168**	0.135*	0.034	0.076	0.091
5. Zero-emission traveling					1.000	0.070	-0.014	0.113	-0.089	0.066	0.117*	0.116*	0.267**	-0.101*
6. Pro ecological actions						1.000	0.217**	0.357**	-0.065	0.386**	0.315**	-0.095	0.292**	0.045
7. Buying of eco-friendly electronics							1.000	0.213**	-0.066	0.270**	0.078	0.075	0.042	0.107*
8. Ecological habits								1.000	-0.258**	0.295**	0.273**	0.075	0.185**	-0.049
9. Food wasting									1.000	-0.142**	-0.045	0.027	-0.215**	0.134**
10. Recycling of electronics										1.000	0.218**	-0.026	0.196**	-0.083
11. Heat saving											1.000	-0.044	0.170**	-0.092
12. Pricing												1.000	-0.025	-0.011
13. Food saving													1.000	-0.006
14. Satisfaction with life														1.000

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 7 shows correlation between age, sex, PEB, and SWL. The significant correlations are weak, but show a meaningful tendency. Younger students tend to recycle at the university, prefer zero-emission travelling, demonstrate ecological habits and are sensitive to the pricing of products. Older students are more likely to buy eco-friendly electronics and recycle electronics. It all concludes to the fact that the majority of older students have higher income and can act in consideration of their needs.

Table 7. Correlations of Demographic Characteristics, Satisfaction with Life, and Pro-Environmental Behaviour

	Age	Sex	Living in university's dormitory	Faculty	Study cycle
1. Electricity and water conservation	-0.034	-0.247**	-0.135*	-0.070	0.020
2. Recycling at the university	-0.134**	-0.021	0.098	0.078	-0.135**
3. Recycling at home	0.003	-0.157**	-0.005	-0.045	-0.099*
4. Choice of packaging	-0.013	-0.090	-0.122*	0.005	-0.034
5. Zero-emission traveling	-0.241**	-0.113*	0.189**	0.065	-0.172**
6. Pro ecological actions	-0.030	0.003	0.007	-0.024	0.019

Table 7 (Continued)

	Age	Sex	Living in university's dormitory	Faculty	Study cycle
7. Buying of eco-friendly electronics	0.139**	-0.106*	-0.196**	-0.156**	0.130*
8. Ecological habits	-0.142*	0.082	0.109	-0.006	-0.148*
9. Food wasting	-0.009	-0.092	-0.083	0.001	0.038
10. Recycling of electronics	0.114*	0.033	-0.034	-0.046	0.137**
11. Heat saving	-0.101	0.035	0.011	-0.006	-0.080
12. Pricing	-0.135**	-0.072	0.078	0.012	-0.126**
13. Food saving	-0.058	-0.087	0.060	-0.013	-0.056
14. Satisfaction with life	-0.026	-0.225**	-0.146**	-0.058	-0.008

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Women have higher SWL, are more prone to recycle at home, prefer zero-emission travelling and buy eco-friendly electronics. Significant correlations are recorded between all demographic factors and buying of eco-friendly electronics. According to the results in the Table 7, young females behave more pro-environmentally than their male colleagues.

Conclusions and discussion

There are some demographical differences in the results of this research. The female students are more satisfied with their lives than their male colleagues. Females also have a somewhat stronger pro-ecological consciousness and expressed ecological habits. In a research carried out in a middle school, it was also concluded that compared to boys, girls had slightly more favourable attitudes and intentions with respect to adopting eco-friendly behaviours, but they did not differ in their reported behaviour [14]. Since there is a correlation between SWL and PEB, it well explains the female engagement in the pro-ecological activities. Age correlates with PEB, however not with life satisfaction. Older respondents showed the tendency to choose more comfortable lifestyle though spending more on it and not disregarding PEB. Further researches could continue with analysing what stimulates PEB in different ages and for different sexes and what are the main reasons for the difference in their SWL.

Price is the main factor influencing the PEB of students of UniX. Given the direct costs that are often associated with PEBs, a narrow approach to psychological wellbeing might assume that spending time, money, or effort on PEBs would undermine the wellbeing by depriving the people of opportunities to spend their resources in ways that benefit themselves more directly [6]. People who start changing their behaviour in a sustainable and green way can begin with actions that do not require financial commitment or excess time, thus making the transition easier. Gradual changes could lead to the ultimate PEB.

Using global data from the World Values Survey, Welsch and Kühling [33] found that recycling, water conservation, and the purchasing of "environmentally-friendly" products predicted life satisfaction controlling for country, income and other demographic variables [6]. So the correlation between PEB and SWL is not one-sided. It is still argued which factors have the most influence.

The limitation of the research is that the reasons of students' PEB are not discussed. A deeper study of causes and consequences behind the correlation between PEB and SWL could be carried out in order to achieve clearer results. These results could be included in the education programmes in schools and universities in order to raise environmentally aware individuals.

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Linkage Between Corporate Social Responsibility and Organizational Trust: Employee Perspective

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Abstract

Corporate social responsibility (CSR) has gained increasing attention over the past decades. While many studies analyse the impact of CSR on consumers, scan research is done by exploring the employee in relation to CSR. The purpose of that paper is to investigate the linkage between CSR and organizational trust from employee perspective. The paper examines employee perception of CSR and reveals the effect of this perception for organizational trust and for CSR importance to employee. Also the paper analyses the effect of CSR importance to employee for organizational trust. The findings show that the positive and significant effect of CSR generally, CSR-employees, CSR-customers and organizational trust is supported. The aggregated set of indicators provides an easy way for organizations for measuring and taking response for CSR in order to increase organizational trust.

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Keywords: corporate social responsibility, organizational trust, employee perspective, CSR importance to employee.

1. Introduction

Business and their role in the society are subject of long and controversial debates in management literature [1]. Assuming that business and society in reality are interdependent [2], more and more organizations apply CSR as

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"win-win" strategy [3] and accept the argumentation of European Commission that CSR is in the interests of enterprises and society as a whole [4]. The Green Paper [5] indicated that CSR "is essentially a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment" (p. 5). In this respect, CSR implies that organizations have a broader range of obligations besides economic and financial ones [6]. However, on another hand CRS offers for organizations competitive advantages [7]. In European Competitiveness Report [8] is highlighted that CSR can bring benefits for organizations in terms of cost structure, human resources, customer perspective, innovation, risk and reputation management, and financial performance. Consumer's favourable perceptions of products, current and potential employees' positive attitude towards the organization or business partners' willingness to do business with the organization are the splendid examples of benefits of being social responsible [7]. These examples support the idea that CSR requires organizations' engagement with multiple stakeholders. Meanwhile, business returns from CSR practices depend on how stakeholders perceive the organization socially responsible practices [6].

CSR is mainly discussed referring to stakeholders of organization – employees, shareholders, investors, consumers, public authorities or NGOs [9]. Despite the variety of stakeholders, employees are treated as highly salient stakeholders [7, 9] as they not only determine the quality of products or services but also because employee well-being is directly related to job performance [7]. However, most existing research investigates CSR from the perspective of consumers [10–12]. This paper fills this gap by focusing on employee perception of CSR.

The employee perception of CSR may differ more or less. Reed [13] argues that people place different weights on information depending on what they consider self-relevant. Based on "self-important" Korschun et al. [14] introduced the construct of "CSR importance to employee". This paper uses the mentioned construct as antecedent for employee perception of CSR and analysis its effect on organizational trust.

Organizations benefit from positive employee perception of CSR. Greening and Turban [15] study revealed that potential employee perception of CSR is positively related with organization's capacity to attract employees. Lee et al. [16] found that when employee perceive CSR activities more positively, employee attachment toward the organization increases. Turker [17] showed that CSR is positively related to employees' organizational commitment. The findings concerning the linkage between employee perception of CSR and organizational trust are not unambiguous. The study of Lee et al. [7] supported the assumption that only some dimensions of CSR (economic and philanthropic) have a significant effect on organizational trust. As organizational trust is essential for maintaining successful long-term employer-employee relationship [7], this study aims to reveal if employee perception of CSR (involving 3 dimensions: environment and community; employees and customers) has an effect and what effect on organizational trust.

The aim of the paper is to reveal the linkage between CSR and organizational trust taking the employee perspective into consideration. For the achievement the aim, the paper examines if employee perception of CSR has an effect of organizational trust, if CSR importance to the employee influences organizational trust, and if employee perception of CSR has an effect on CSR importance to the employee. The added value of this paper is that it contributes to literature by the exploring employee in relation to CSR. More specifically, the paper shows that the extent to which an employee believes it is important for the organization to act responsible should not be underestimated by investigating CSR from the employee perspective. The paper provides empirical evidences suggesting for the organization to invest in CSR activities, as employee perception of CSR has an impact on employee attitudes, namely organizational trust. Such impact may transform to better organizational performance.

The remainder of the paper is structured as follows. Section 2 gives an overview of the literature on CSR and on the role of stakeholders emphasizing employees. The employee perception of CSR, organizational trust and CSR importance to the employee are later described. The third section describes the research method that was applied. Section 4 presents the empirical results and discussion. Finally, conclusions are drawn.

2. Theoretical background

The paper builds on the present literature by exploring the employee in relation on CSR. The paper examines employee perception of CSR. In additional it explores the consequences of employee perception of CSR, namely organizational trust. Moreover, the paper investigates the relation of CSR importance to the employee on both constructs: employee perception of CSR and organizational trust.

Figure 1 provides conceptual model based on theoretical insights.

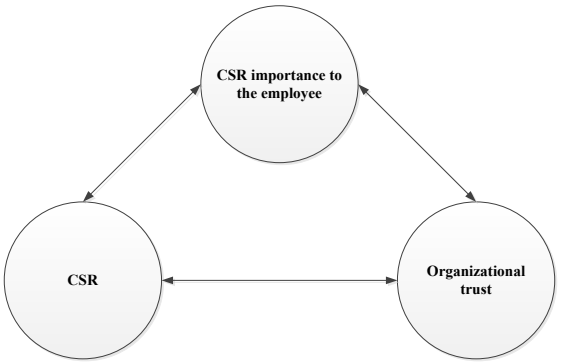

Fig. 1. The conceptual model

2.1. Corporate social responsibility

CSR is one of the most prominent concepts in the literature, however it is still difficult to give a commonly accepted definition [17]. European Commission [4] defines CSR "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (p. 3). According to Lee et al. [7] CSR is "a term grounded on the perspective that corporations should make direct or indirect contributions to the society by performing socially responsible behaviours and/or engaging in actions that advance some social good or welfare" (p. 746). Park et al. [18] argue that CSR commonly refer to the relationship between businesses and society, which denotes organizations' actions to balance financial performance, impacts on society and the environment.

Caroll [19] announced that one research paper claimed to find at least 37 different definitions of CSR. Garriga and Mele [20] propose to categorize the numerous CSR theories into four groups: instrumental, political, integrative and ethical. To the instrumental group belong the theories which consider only the economic aspect of the interactions between business and society; the organization is an instrument for wealth creation and that this is its sole social responsibility. CSR is understood as a mere means to the end of profits. The political group of CSR theories focuses on interactions and connections between business and society and on the power and position of business and its inherent responsibility. The integrative theories look at how business integrates social demands, arguing that business depends on society for its existence, continuity and growth. These theories consider social demands to be the way in which society interacts with business and gives it prestige and certain legitimacy. Finally, the ethical theories focus on the ethical requirements that strengthen the relationship between business and society. The organizations ought to accept social responsibilities as an ethical obligation above any other consideration.

Caroll [19] perceives CSR as an explicit framework to better understand the business and society relationship. Caroll [21] suggest that there are 4 dimension of CSR: legal, ethical, economic and philanthropic. Economic dimension of CSR is concerned with the organization's economic responsibilities to its stakeholders in terms of efficiency and competitiveness. Legal dimension means that business is expected to comply with the laws and regulations promulgated by governments as the ground rules under which business must operate. The ethical dimension refers to the organization's responsibility to be just and fair in making decisions and conducting performance and such responsibility goes beyond its legal obligation. The philanthropic dimension encompasses those actions that are in response to society's expectation that business is a good corporate citizen and includes actively engaging in activities that promote human welfare or goodwill.

Van Marrewijk and Were [22, 23] criticize "one solution fits all" attitude to CSR and call to accept more specific definitions of CSR which match the awareness, development and ambition levels of organizations. Van Marrewijk [23] proposes 5 levels of CSR, namely compliance-driven, profit-driven, caring, synergistic and holistic CSR. The

holistic CSR is aimed at contributing to the quality and continuation of life of every being and entity, now and in the future. In this case the organization‘s the motivation for CSR is understanding that sustainability is the only alternative since everything and everyone are mutually interdependent. Moreover, Gallardo-Vázquez and Sanchez-Hernandez [24] argue that despite the heterogeneity of the empirical results, they all indicate that organizations which implement CSR actions clearly perform better.

The provided CSR definitions are closely related to the concept of stakeholders. The next section briefly introduces the role of stakeholders emphasizing employee as the highly relevant stakeholder in framework of CSR.

2.2. The central role of employee as one of the stakeholders

The scope of the responsibility seems to be one of the frequently debated issues related to CSR [7]. Three approaches showing the responses to the question to which an organization has a responsibility could be introduced: shareholder approach, stakeholder approach, and societal approach [22]. The well-known quotation of Friedman [25] is that “the social responsibility of business is to increase its profit” reflect shareholder approach. Stakeholders approach indicates that organizations are not only accountable to its shareholders, but also to other stakeholders who are perceived as „those groups or individuals who can affect or are affected by the achievement of the organisation’s objectives or are those actors with a direct or indirect interest in the company“ [26, p. 326-327]. According to the societal approach, organizations are responsible to society as a whole as they a integral part of it [23]. The paper follows stakeholders approach as recently engagement of the organization with its stakeholders is no longer optional, but rather a necessity [27].

Notwithstanding different classification of stakeholders, employees belong to relevant ones [9]. According to Mitchell et al. [28] employees possess the three characteristics which validate their role of salient stakeholder, namely legitimacy, urgency and power. Due to significant influence on the organization employees can be identified as high power [28] “influencer” [29]. European Competitiveness Report [30] highlights the strongest evidence of a positive impact of CSR on organizations competitiveness appears in the cases of human resources. Employees are close integrated with an organization; they actually “constitute” the organization [9]. By carrying organization’ CSR activities out in daily operations, employees help to realize many of goals. [18]. Moreover, employees are greatly affected by the success or failure of the organization. Employees have a continuing investment in the organization: an investment of experience and skills or an investment in taking a job that may cause some changes [9]. Employees may become financial dependent on organization or they may also depend on their work for social relationships [9]. Hence, employees can be identified as high legitimacy [28], ‘claimant’ stakeholders [29] to whom the company has perfect duties [29]. Thereby, CSR is considered as a process by which organizations manage their relationships with employees who can have a real influence on their license to operate [5].

2.3. The employee perception of CSR

The organization’s relationship with employees via CSR activities is influenced by the employee perception of CSR activities [18]. Previous research confirmed that CSR activities can positively influence attitudes and behaviour of employees [31]. CSR initiatives enhance the performance of sales staff [32], employees’ commitment to the organization [33], and their identification with the organization [9]. Employee perception of CSR activities plays an important role in both increasing loyalty and decreasing turnover rate internally [16]. Employees that have a favourable view of an organization CSR tend to have positive views about the organization in such fields, such as senior management leadership, senior management integrity, and the organization competitiveness [16].

This paper defines employee perception of CSR activities as the degree to which employees perceive an organization supports CSR activities. Park et al. [18] argue that previous studies suggest that CSR activities are better understood theoretically and tested empirically when they are organized by stakeholder types (e. g. customers, employees, etc.) rather than responsibility types (e.g. economic, legal, etc.). Hereby, the paper conceptualizes employee perception of CSR activities as a latent second order factor composed of three dimensions organized by stakeholder types (CSR-environmental and community; CSR-employees; CSR-customers).

2.4. Organizational trust

Scholars typically combine different theoretical approaches (most often transaction cost economics and socio-psychology) to capture the complex and multi-dimensional nature of trust [34]. Young-Ybarra and Wiersema [35] combined transaction cost economics and social exchange theory and proposed such definition of trust: "Trust is based on three components: dependability (expectation that the partner will act in the alliance's best interests), predictability (consistency of actions), and faith (partner will not act opportunistically)" (p. 443). For the purpose of that paper it is important to highlight that trust has been a widely studied concept as a component of the quality of relationships [36, 37]. This paper implies the definition of trust proposed by Mayer et al. [38], arguing that trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (p. 712). Extending this to the organizational context, trust can be viewed as employees' "willingness to be vulnerable to the organization's actions because they expect the organization will make decisions and perform in consideration of their interest and welfare" [12, p. 747].

As it was mentioned before, employee perception of CSR has an influence on employees' attitudes [31]. Organizational trust is critical facet for maintaining a successful long-term organization-employee relationship [7]. European Commission highlight that by addressing CSR activities organization can build long-term employee trust as a basis for sustainable business models, whereas higher level of trust in turn help to create an environment in which organizations can innovate and grow [5].

As such, the current paper proposed that employee perception of CSR (and its dimensions) will have a positive influence on organizational trust.

H1. *Employee perception of CSR is positively related to organizational trust.*

H1a. *Employee perception of CSR-Environment and community is positively related to organizational trust.*

H1b. *Employee perception of CSR-Employees is positively related to organizational trust.*

H1c. *Employee perception of CSR-customers is positively related to organizational trust.*

2.5. CSR importance to the employee

Korschun et al. [14] argue that there is considerable heterogeneity in the degree to which people believe that organizations should engage in CSR activity. Based on social identify theory, Reed [13] argues that people place differing weights on information depending on a person's self-view, on what is self-importance to particular person. Following that idea Korschun et al. [14] introduced the construct of "CSR importance to the employee" defining it as "the extent to which an employee believes it is important for companies to behave in socially responsible ways" (p. 24). As CSR importance to the employee increases, CSR information becomes not only more salient but also more diagnostic of the values of the organization [13]. This implies that the employee is more likely to use CSR information as a criterion for organizational trust [14].

Thus, the paper proposes the linkage between CSR importance to the employee and employee perception of CSR and organizational trust.

H2. *Employee perception of CSR is positively related to CSR importance to the employee.*

H2a. *Employee perception of CSR-Environment and community is positively related to CSR importance to the employee.*

H2b. *Employee perception of CSR-Employees is positively related to CSR importance to the employee.*

H2c. *Employee perception of CSR-Customers is positively related to CSR importance to the employee.*

H3. *CSR importance to the employee is positively related to organizational trust.*

3. Research method

3.1. Sample and data collection

The survey was prepared to test conceptual model and raised hypothesis. The survey covered two groups of questions: demographic and main questions. Demographic questions were constructed in order to collect information about employees. The second part of survey questionnaire was based on the different validated research questionnaires variables (Fig. 2, Table 1). Consistent with previous research CSR measurements were divided into three groups: CSR-Environmental and community (12 items); CSR-Employees (6 items); CSR-Customers (5 items) [18]. The measurement criteria were chosen to create indicators of company social responsibility through environment and community, employees and customers' perspective. CSR questionnaire included statements such as "Organization actively discuss and take over the environmental impact of the organization's activities". Similarly CSR importance to employee was measured through 3 items [14] and organizational trust through 5 items [7]. CSR was measured with a six-time Likert scale (1 = "completely disagree"; and 5 = "completely agree"; 3 indicated "neither agree or neither disagree" and 6 = "I can't respond") [18].

The respondents chosen to gather the data and test the hypothesis were working age employees in Lithuania. In order to establish the size of the research, Lithuanian statistics database was analysed. This produced listing 398 employees with a 5% of error which indicates the reliability of the data. The research was based on a non-probability selection method and criteria of convenience in order to get the data from the respondents who are easier and more convenient to reach. The questionnaire was distributed online. Data collection took over 4 months. The survey was stopped when the required amount of full questionnaires were collected. Table 2 provides a profile of the respondents.

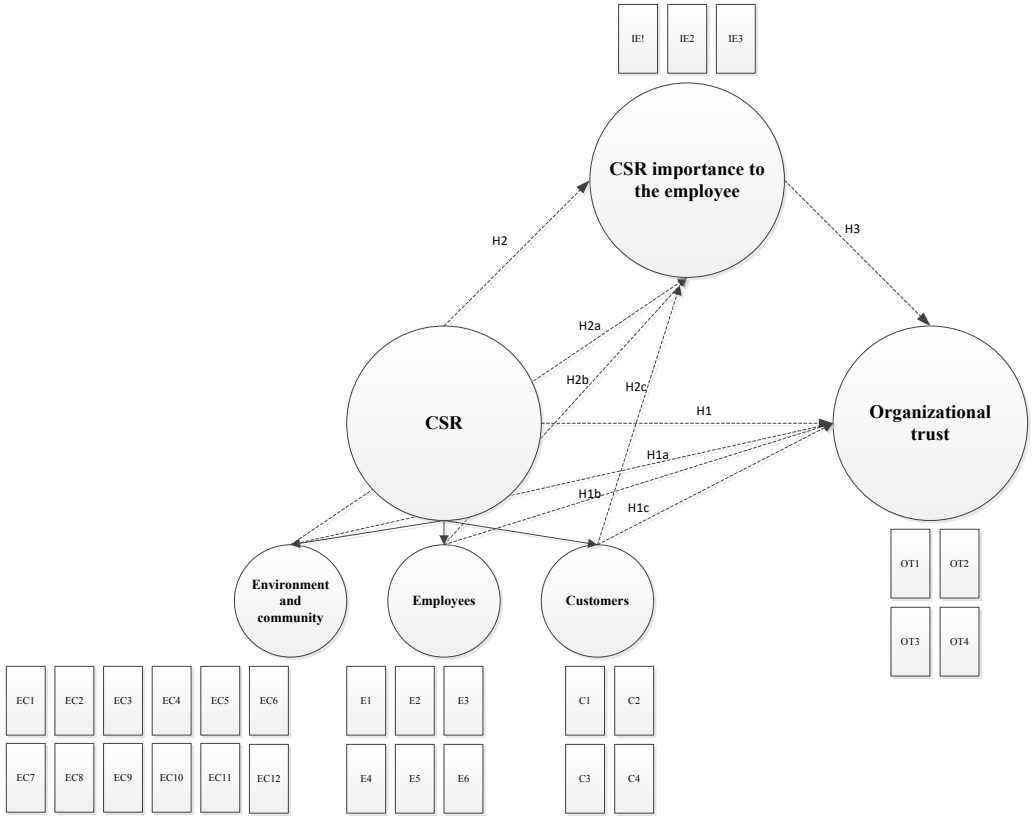

Fig. 2. Aggregated model for estimation results (conceptual model)

Table 1. Questionnaire constructs

Theoretical model construct	Measurable variables	Source
CSR	**Environment and community**	
	EC1 Organization actively attempts to purchase products and services which minimize environmental impacts	
	EC2 Organization incorporates environmental concerns in business decisions	
	EC3 Organization actively discuss and take over the environmental impact of the organization's activities	
	EC4 Organization supports environmental initiatives of other organizations	
	EC5 Organization encourages guests to reduce their environmental impact through programs and initiatives	
	EC6 Organization reports on the hotel's environmental performance	
	EC7 Organization incorporates the interests of community in business decisions	
	EC8 Organization respects consumer rights beyond legal requirements	
	EC9 Organization financially supports local charities through financial donations, sponsoring events, and/or providing goods and services	
	EC10 Organization helps improve the quality of life in the local community	
	EC11 Organization encourages employees to be actively engaged in local community organizations	
	EC12 Organization actively works with international organizations which promote responsible business	[18]
	Employees	
	E1 Organization provides a safe and healthy working environment to all employees	
	E2 Organization treats our employees fairly and respectfully	
	E3 Organization encourages employees to develop their skills and careers	
	E4 Organization policies encourage a good work and life balance for employees	
	E5 Organization provides employees with fair and reasonable salaries	
	E6 Organization incorporates the interests of employees in business decisions	
	Customers	
	C1 Customer satisfaction is highly important for my organization	
	C2 Organization is responsive to the complaints of our customers	
	C3 One of the main principles of the organization is to provide high-quality services and products to our customers	
	C4 Organization incorporates the interests of customers in business decisions	
Organizational trust	OT1 Organization tries to meet my expectations	
	OT2 Organization is committed to proper management practices	[7]
	OT3 Organization has an overall responsibility	
	OT4 Organization is committed to understand employees	
CSR importance to the employee	IE1 It's important to me that organizations help local communities where they operate	
	IE2 I'm the type of person who cares deeply about organizations being socially responsible	[14]
	IE3 I feel that organizations need to make the world a better place	

Table 2. Respondents' profile

Characteristics	Frequency (n)	Percentage (%)
Gender		
Female	352	88
Male	46	12
Age		
26-35	136	34
36-45	92	23
46-55	170	43
Position		
Holding managerial positions	112	28
Holding other positions	286	72

In the respondents group there were more females than males. 43% employees were at the age between 46 and 55; the other 34% employees were at the age group from 26 and 45. A majority of respondents (72%) were employed for the others positions; only 28% were employed for the managerial positions.

3.2. Strategy of data analysis and results

The research data were analysed using SPSS (version 21) program. Survey scale reliability was tested using

Cronbach's α (Table 3). For the research data reliability analysis Cronbach's α value was analysed through two-scale coefficients. If Cronbach's α value varies from 0.6, the theoretical model construct items are "acceptable", whereas if Cronbach's α value varies from 0.7, the theoretical model construct items are "respectable" [39], [40]. Calculated Cronbach's α showed CSR scale value (0.725), CSR-Environment and community (0.767), CSR-Customers (0.740), CSR-Employees (0.741), CSR importance to the employee (0.956), organizational trust (0.805) are respectable values for further research questions analysis.

Table 3. Construct scale items reliability analysis

Theoretical model construct items	Reliability	Mean	SD
CSR (N of Items=22)	.725	3.31	.231
CSR-Environment and community (N of Items=12)	.767	2.41	.367
CSR-Employees (N of Items=6)	.741	3.77	.365
CSR-Customers (N of Items=4)	.740	3.74	.295
Organizational trust N of (Items=4)	.805	3.78	.351
CSR importance to the employee (N of Items=3)	.956	4.15	.512

Hypotheses were tested using descriptive statistics, correlation and regression analysis, which gives insight into the meaning of the coefficients and the tests of significance based on them. Correlation analysis was used to test relationships between variables. Table 4 shows significant correlations between theoretical model construct items. CSR is found positively related with CRS-Environment and community (r= 0.670), CRS-Employees (r= 0.662), CRS-customers (r= 0.699) and organizational trust (r= 0.287). Organizational trust is found positively related with CRS-Employees (r= 0.359) and CRS-Customers (r= 0.183) theoretical model construct items. There was no found correlation between CSR importance to the employee and other theoretical model construct items. As there was no find correlation between CSR-Environment and community and organizational trust, and CSR importance to the employee, for the further testing the theoretical model item CSR-Environment and community was excluded. Therefore, as the item CSR importance to the employee did not correlate between theoretical construct model items, it was excluded for the further testing.

Table 4. Theoretical construct model correlation

Theoretical model construct items	Correlations among theoretical model construct items					
	CSR	Environment and community	Employees	Customers	Organizational trust	CSR importance to the employee
CSR	1					
CSR-Environment and community	.670**	1				
CSR-Employees	.662**	.052	1			
CSR-Customers	.699**	.268**	.252**	1		
Organizational trust	**.287****	.039	**.359****	**.183****	1	
CSR importance to the employee	.026	.052	.013	-.021	-.006	1

**. Correlation is significant at the 0.01 level (2-tailed).

As theoretical construct model correlation results showed correlation between few items, it allowed testing the hypothesis by the regression analysis (Table 5).

The results of the regression analysis indicated very strong linkage between CSR, CSR-Employees, CSR-Customers and organizational trust items. Each of the coefficients is significant ($p<0.05$), which allows to support H1, H1b and H1c hypothesis (Table 6).

The results (Table 5–6) show that the perception of CSR, CSR-Employees and CSR-Customers is positively related to organizational trust. The calculated variance was very small; R^2 varies from 0.183 to 0.359. This means that the more employees positively perceived CRS, the more they trust the organization.

Table 5. Theoretical construct model regression analysis

Dependent variable	Model	Standardized coefficients			Adjusted
		Sig	*B*	*t*	R^2
Organizational trust[a]	CSR[b]	**.001***	.436	5.971	.287
	CSR-Employee[b]	**.001***	.320	6.915	.359
	CSR-Customers[b]	**.038***	.118	2.051	.183

Note: [a]Dependent variable: organizational trust (dimension 1 of CSR); Adjusted R^2= 0.287; *p<0.05.

Table 6. Summary of hypothesis and findings

Hypothesis	Relationships	Findings
H1. Employee perception of CSR is positively related to organizational trust.	**Positive**	**Supported**
H1a. Employee perception of CSR-Environment and community is positively related to organizational trust.	-	Denied
H1b. Employee perception of CSR-Employees is positively related to organizational trust.	**Positive**	**Supported**
H1c. Employee perception of CSR-Customers is positively related to organizational trust.	**Positive**	**Supported**
H2. Employee perception of CSR is positively related to CSR importance to the employee.	-	Denied
H2a. Employee perception of CSR-Environment and community is positively related to CSR importance to the employee.	-	Denied
H2b. Employee perception of CSR-Employees is positively related to CSR importance to the employee.	-	Denied
H2c. Employee Perception of CSR-Customers is positively related to CSR importance to the employee.	-	Denied
H3. CSR importance to the employee is positively related to organizational trust.	-	Denied

4. Discussion

The paper aimed at exploring the employee in relation on CSR. The paper has addressed and tested a model that explains the relationship between employee perception of CSR and organizational trust as well as employee perception of CSR and CSR importance to employee, and CSR importance to employee and organizational trust. Research results have indicated both theoretical and managerial implications.

The results provide support for most of the previous studies [7] concluding that the perception of CSR are multidimensional and each dimension has a different effect in determining employee attitudes. For example, the positive effect between CSR and organizational trust was found (H1 was supported) and this finding confirms Park et al. [18] contention that generally CSR perception can impact organizational trust. Moreover, the study suggest that the more positively employee perceive their organizations CSR activities concerning customers, the more they trust in organization. The same applies in case for another CSR dimension, namely CSR-employees. It seems that employees view the care of them as a mandatory aspect in order to put trust in organization. The expectations of employees that the organization will make decisions and perform in consideration with their interest and welfare increase if employee more positive perceive organization's actions concerning them. Hereby, treating employee fairly, encouraging employee to develop their skills or proving conditions for work-life balance will help employees to trust the organization more.

However, the situation is different in regards to one more dimension of CSR, namely CSR-Environment and community. In contrast to expectations, no significant relationship was detected between CSR-Environment and community and organizational trust. One of the plausible explanation for this finding is that environmental issues and caring about community still are not the part of the culture in the country where survey was conducted.

Particular attention was made to the CSR importance to the employee; however, the research results did not allow proving the hypothesis. This finding disregards to Reed [13] and Korschun et al. [14] studies of CSR importance to the employee and CSR perception relationship. From employee perspective, factors such as help local communities where the organization operates, the perceptions on better world did not lead to understanding of CSR role.

From the theoretical perspective, this paper supports the idea that all dimensions of CSR should be considered when measuring perceptions related to CSR [12]. The understanding the unique role of each dimension is important seeking to gain trust from employees.

From managerial point of view, organizations should acknowledge the importance of CSR. Proved hypothesis provides a comprehensive tool for organizations managers to test the employee perception to CSR and its relation to organisation trust. Supporting previous research [12] the findings demonstrate that organizations by investing resources in CSR activities create value for themselves by increasing organizational trust. However, for the direct application, organization managers should explore the pilot study for the moderating effect of organization size and other respondent's data which can make a significant impact to research conclusions.

Conclusions

Recent years, CSR has gained increasing attention from both scholars and practitioners. CSR is mainly discussed referring to stakeholders of organization considering that employees belong to highly salient stakeholders. The aim of the paper was to reveal the linkage between CSR and organizational trust taking employee perspective into consideration. For the achievement the aim, the paper examined if employee perception of CSR has an effect of organizational trust, if CSR importance to the employee influences organizational trust, and if employee perception of CSR has an effect on CSR importance to the employee. The findings of this paper revealed the positive effect of CSR on organizational trust. The results demonstrated some doubts regarding the ability of CSR-Environment and community to influence organizational trust, as no statistically significant relationships were found between employee perception of the mentioned CSR dimension and organizational trust. Contrary to the expectations, CSR importance to the employee does not predict how employees perceive CSR and if the employees trust the organization.

The paper has several limitations to consider when interpreting the mentioned findings. The paper uses a sample from a single country, it has a limitation due to its restrictive generalizability. In order to overcome that factor, future research could be extended to a region. Only employee sample is used in this research; future research could further develop a holistic model that incorporates the perception of more stakeholders. As the paper do not incorporate the characteristics of organizations, future research could expand issues how perceived CSR and its impacts on organizational trust vary with organizational financial performance, market share, etc.

In conclusion, this paper challenges researchers and managers to move toward more sophisticated assessments concerning how and why employee perception on CSR affect employee attitudes and behaviour which might lead to better organizational performance.

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Formation and Approbation of the Alignment Technique of Inter-territorial Differences in Housing and Municipal Development of Urban Agglomeration

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Abstract

The relevance of the study is determined by the need to form the alignment technique of inter-territorial differences in the housing and municipal development of the urban agglomeration.
The article presents the stages of the alignment technique of inter-territorial differences in the housing and municipal development of the urban agglomeration. Approbation of the technique was implemented within the framework of private purposes (alignment of the population's security in housing and municipal services and alignment of the state system of the city economy) using the example of the Krasnoyarsk agglomeration.

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*Keywords:*housing and municipal development; urban agglomeration; degree of inter-territorial differences.

1. Introduction

At the moment, the evolution of scientific views has led to the perception of urban agglomeration as a progressive and integral form of settlement, which concentrates a significant economic potential. As a result of the discussions, most scientists agreed that urban agglomeration is a compact and relatively developed set of

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complementary urban and rural settlements clustered around one or several huge cities and united by intensive multifaceted connections into a complex and dynamic unity; this is the space of potential and real interactions, which incorporates the weekly life cycle of the majority of inhabitants of a modern large city and its satellite zone in Kuznetsova[4]. McCann and Folta [6] noticed that this type of settlement allows combining the benefits of concentration of various services in large cities with a dispersed nature of their realization and consumption, thus, maintaining a dynamic balance between the diverse economic, social and environmental conditions of people's life.

Quigley and Rosenthal [7] noticed that sharp inter-territorial differences in the housing and municipal development of the urban agglomeration have as their inevitable consequence the expansion of the number of lagging territories, the weakening of the mechanisms of inter-territorial interaction and the growing contradictions, which makes it very difficult to implement a unified policy of housing and municipal transformation. It is proposed to use method to eliminate these negative consequences and to align inter-territorial differences in the housing and municipal development of the urban agglomeration allowing:

- choose indicators affecting on inter-territorial differences in the housing and municipal development on the basis of objects and purposes harmonization of aligning inter-territorial differences in the housing and municipal development of urban agglomeration;
- comprehensively assess the variation and identify trends in housing and municipal development of municipalities with the help of a developed system of selected indicators and assessment methods that characterize the degree of inter-territorial differences; make management decisions about the need to reduce it;
- choose tools that require levels alignment of their housing and municipal development in the urban agglomeration depending on the capabilities and needs of municipalities;
- develop a set of measures aimed at aligning inter-territorial differences in the housing and municipal development of urban agglomeration using the selected tools.

2. Method

The proposed technique for alignment inter-territorial differences in the housing and municipal development of the urban agglomeration consists of seven stages. The first stage of the technique is the harmonization of management objects and purposes for alignment of inter-territorial differences in the housing and municipal development of the urban agglomeration. Municipal and housing facilities are considered as objects of managing influence, i.e. the authorities' attention is directed on it to align of inter-territorial differences in the housing and municipal development of the agglomeration in Borovaya and Gubanova [2].

Since the alignment of inter-territorial differences in the housing and municipal development of the urban agglomeration is a multi-purpose system, it is necessary to clearly identify the purposes of alignment and distribute them on three levels: strategic, tactical and operational.

A set of purposes of different levels should be represented by a tree of purposes. Advantages of the tree of purposes are that it allows building relationships between the purposes of different levels, to split large purposes into stages, to see a clear picture of the system of purposes. A tree of purposes connects long-term and short-term purposes, purposes from different areas of life. The use of this technique makes it possible to create a strategic picture for alignment of inter-territorial differences in the housing and municipal development of the urban agglomeration. Kuznetsova [4] indicated that the top level of the tree of purposes can be a mission or vision.

The structure of the purpose system should correspond to the structure of the control object, then each purpose is achieved by a certain element of this object. In this case, the purpose-oriented measure of each element of the control object is increased. Perhaps it is necessary to change the structure of the control object to achieve the required matching.

In accordance with the principle of measurability, inherent in the purposes for alignment of inter-territorial differences in the housing and municipal development of the urban agglomeration, a need of for their transformation into specific tasks. For the purposeful alignment of inter-territorial differences in the urban agglomeration and its orientation to specific final results, at the second stage of the proposed technique, particular indicators of the assessment of the level of inter-territorial differences in housing and municipal development of municipalities in the urban agglomeration are selected, thus an integral indicator is constructed. The particular indicators are transformed

and aggregated to compare them with each other. At the same time, the level of inter-territorial differences in the housing and municipal development of the urban agglomeration can be assessed in the third stage of the technique by comparing the achieved results using the proposed in Kuzmich et al. [5] measurement methods: the range of variation, the average square deviation and the coefficient of variation. This set of methods considers all factors, conditions and features of housing and municipal development of municipalities in the urban agglomeration.

Kalinnikova [3] determined that the harmonization of objects and purposes, the choice of indicators for assessing the level of inter-territorial differences in the housing and municipal development of municipalities in the urban agglomeration, as well as methods for measuring inter-territorial differences provide the possibility of managing results, creation the system of motivation, comparison and assessment of options for solutions and, finally, the forces concentration in priority directions of activity, the formation of conditions that ensure the required results, as well as the work organization of the management subjects to achieve the set purposes.

If on the fourth stage of the technique, as a result of the verification, the need to reduce inter-territorial differences in the housing and municipal development of the urban agglomeration does not occur, then the management object and purpose are refined, and then the level and measure of the degree of inter-territorial differences in the housing and municipal development of municipalities is assessed again.

In the fifth stage, the alignment direction is selected depending on the third stage of this technique. In what direction of housing and municipal development (housing provision, the cost of housing, provision of housing and municipal services, the provision quality of housing and municipal services, sanitary cleaning system), according to the assessment of inter-territorial differences in the urban agglomeration, “bottle necks” appear, so such “necks” need in development of measures for alignment, relying on existing alignment tools.

In accordance with the purposes for alignment of inter-territorial differences in housing and municipal development, in the sixth stage, alignment tools of the level of inter-territorial differences in the housing and municipal development of the urban agglomeration are chosen. At the seventh stage of the technique, practical measures for alignment of inter-territorial differences in the housing and municipal development of the urban agglomeration are taken with the help of selected tools.

3. Results

Let’s consider approbation of method within the framework of particular purposes (alignment of the provision of housing and municipal services and alignment of the state of city economy system) on the example of the Krasnoyarsk agglomeration. The following measures are proposed for aligning inter-territorial differences in the housing and municipal development of urban agglomeration in Anikina and Kuzmich[1]:

- construction and commissioning of an energy complex with a module for combined burning of solid household waste based on plasma chemical technology in combination with several polygons located in different regions. This enterprise destroys 150 thousand tons of garbage a year and produces electricity in the amount of more than 50 million kWh per year.
- construction and commissioning of an incineration plant. The plant’s productivity is 360 thousand tons per year, that is, one thousand tons per day. The name “incineration plant” does not accurately and fully determine the importance of the enterprise; rather it is a small heat and power plant with alternative fuel. The enterprise produces about 10 MWh of electricity.

As a result of the measures implementation, two indicators will be changed, assessing assess the level of housing and municipal development of the Krasnoyarsk agglomeration: “Coefficient of housing and municipal service provision” (Table 1) and “The degree of recycling” (Table 2). This work is a logical continuation of the previous one [5] where authors made a rational choice of indicators and estimated the level of housing and communal development of the Krasnoyarsk agglomeration for 2011–2015.These estimations are the initial data for this study, and moreover, they help to compare the results of this study with similar results for the previous period.

Thus, according to Table 1, the indicator “Coefficient of housing and municipal service provision” increased in relation to the values of this indicator in 2015 by 0.15% for the implementation of the first, 0.72% for the second and 0.87% for joint implementation of two measures.

Table 1. Indicator "Coefficient of housing and municipal service provision" before and after the measures

Municipalities	2011	2012	2013	2014	2015	Implementing the first measure	Implementing the second measure	Implementing two measures
Coefficient of housing and municipal service provision, %								
Krasnoyarsk	79.13	79.49	79.57	79.71	80.17	80.23	80.48	80.53
Divnogorsk	72.14	72.14	72.46	78.83	79.11	79.18	79.44	79.51
Sosnovoborsk	85.71	85.71	85.71	85.71	85.71	85.76	85.93	85.98
Emelyanovskiy district	30.90	34.66	25.96	25.73	25.97	26.22	27.11	27.36
Suhobuzimsky district	31.14	34.44	30.84	30.99	30.93	31.16	32.00	32.23
Berezovsky district	48.07	48.20	48.33	49.87	51.26	51.42	52.01	52.17
Mansky district	19.78	20.57	24.31	19.73	19.91	20.18	21.15	21.42
Integral indicator	52.41	53.60	52.46	52.94	53.30	53.45	54.02	54.17

Table 2. Indicator "The degree of recycling" before and after the measures

Municipalities	2011	2012	2013	2014	2015	Implementing the first measure	Implementing the second measure	Implementing two measures
The degree of recycling, %								
Krasnoyarsk	90.00	93.00	95.00	96.00	97.00	97.54	98.29	98.84
Divnogorsk	28.00	30.00	52.00	58.00	62.00	68.85	78.44	85.29
Sosnovoborsk	38.00	42.00	60.00	75.00	80.00	83.61	88.65	92.26
Emelyanovskiy district	87.00	88.00	90.00	92.00	93.00	94.26	96.03	97.29
Suhobuzimsky district	3.00	5.00	7.000	9.00	10.00	26.22	48.94	65.16
Berezovsky district	85.00	86.00	87.00	89.00	90.00	91.80	94.33	96.13
Mansky district	2.00	3.00	5.00	7.00	8.00	25.00	49.50	64.38
Integral indicator	47.57	49.57	56.57	60.86	62.86	69.61	79.17	85.62

According to Table 2, the indicator "The degree of recycling" increased in comparison with the value in 2015 by 6.75% with the implementation of the first, by 16.31% with the implementation of the second and by 22.76% with the joint implementation of the two measures. An increase in these indicators indicates a positive effect of the measures taken for the Krasnoyarsk agglomeration as a whole.

The implementation of projects on the construction of incineration plants using existing agglomeration effects and the orientation of housing and municipal development programs for the integrated use of economic potential and innovative development will generally improve the level of territories development, and thereby reduce the degree of inter-territorial differences in the housing and municipal development of the Krasnoyarsk agglomeration.

Such agglomeration economy, which appears as a result of interaction within the framework of the construction and commissioning of the energy complex with the module for combined combustion of solid domestic waste based on plasma chemical technology, applies to all municipalities located in the Krasnoyarsk agglomeration. This will reduce, in particular on the indicator "The degree of recycling", the absolute and average deviation in the level of inter-territorial differences by 16.46 and 6.53 units, respectively, the degree of its variability by 14.88%; on theindicator "Coefficient of housing and municipal service provision" absolute and average deviation in the level of inter-territorial differences by 0.22 and 0.09 units respectively, the degree of its variability by 0.31% (Table 3).

It should be noted, that such agglomeration economy, which appears as a result of interaction within the framework of the construction and commissioning of the incineration plant, applies to all municipalities located in the Krasnoyarsk agglomeration.

Table 3. The degree of inter-territorial differences in the housing and municipal development of Krasnoyarsk agglomeration implementing the first measure

Assessing indicators	The degree of inter-territorial differences before the measure			The degree of inter-territorial differences after the measure		
	The range of variation, *R,* units	The average square deviation, σ, units	The coefficient of variation, V_σ, %	The range of variation, *R,* units	The average square deviation, σ, units	The coefficient of variation, V_σ, %
Coefficient of housing and municipal service provision	65.80	26.20	49.16	65.58	26.11	48.85
The degree of recycling	89.00	35.68	56.76	72.54	29.15	41.88

As a result, we note a decrease, in particular, in the indicator "The degree of recycling" an absolute and average deviations in the degree of inter-territorial differences by 39.64 and 15.81 units respectively, the degree of its volatility by 31.66%; also we note a decrease in the indicator "Coefficient of housing and municipal service provision" an absolute and average values of deviations in the degree of inter-territorial differences by 1.02 and 0.4 units respectively, the degree of its variability by 1.4% (Table 4).

Table 4. The degree of inter-territorial differences in the housing and municipal development of Krasnoyarsk agglomeration implementing the second measure

Assessing indicators	The degree of inter-territorial differences before the measure			The degree of inter-territorial differences after the measure		
	The range of variation, *R,* units	The average square deviation, σ, units	The coefficient of variation, V_σ, %	The range of variation, *R,* units	The average square deviation, σ, units	The coefficient of variation, V_σ, %
Coefficient of housing and municipal service provision	65.80	26.20	49.16	64.78	25,80	47.76
The degree of recycling	89.00	35.68	56.76	49.36	19.87	25.10

Such agglomeration economy, which appears as a result of interaction within the framework of two measures, applies to all municipalities located in the Krasnoyarsk agglomeration. This leads to a significant decrease, in particular, in indicator "The degree of recycling" an absolute and average deviations in the degree of inter-territorial differences by 54.55 and 21.87 units respectively, the degree of its variability by 40.63%; also it leads to a significant decrease in the indicator "Coefficient of housing and municipal service provision" an absolute and average values of deviations in the degree of inter-territorial differences by 1.24 and 0.49 units respectively, the degree of its variability by 1.71% (Table 5).

Table 5. The degree of inter-territorial differences in the housing and municipal development of Krasnoyarsk agglomeration as a result of two proposed measures.

Assessing indicators	The degree of inter-territorial differences before the measures			The degree of inter-territorial differences after the measures		
	The range of variation, *R,* units	The average square deviation,σ, units	The coefficient of variation,V_σ, %	The range of variation, *R,* units	The average square deviation,σ, units	The coefficient of variation,V_σ, %
Coefficient of housing and municipal service provision	65.80	26.20	49.16	64.56	25.71	47.45
The degree of recycling	89.00	35.68	56.76	34.45	13.81	16.13

Conclusion

According to the obtained results (Tables 3–5), the measures taken to align inter-territorial differences in the housing and municipal development of the Krasnoyarsk agglomeration proved to be effective, i.e. reduced their degree.

Such agglomeration economy, which appears as a result of interaction within the framework of the proposed measures, applies to all municipalities located in the Krasnoyarsk agglomeration within a radius of 30 km. Such economy is obtained due to economy of production scale and economy localization associated with the location of enterprises.

Having new assessments of inter-territorial differences in the housing and municipal development of the Krasnoyarsk agglomeration, the implementation of new measures can be planned by changing the choice of the alignment direction in the housing and municipal development of the agglomeration.

Thus, developed technique for alignment of inter-territorial differences in housing and municipal development of Krasnoyarsk agglomeration has an iterative character and is intended for constant control over the degree of indicators characterizing inter-territorial differences in the housing and municipal development of agglomeration.

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Strategic Management of the Company in a Turbulent International Environment

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Abstract

The article raises the issue of decision-making and strategies developing by business entities entering foreign markets. The author discusses the factors influencing actions taken by the entrepreneurs, which determine their aims, directions of development and of large-scale international operating on foreign markets. The aspects of international entrepreneurship in terms of the concept of global competitiveness and turbulence of business environment, i.e. issues of its uncertainty of economy, access to resources or occasions searching outside the domestic market which, in general, result from the strategic management in the international dimension are the subject of dispute in the article.

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Keywords: strategic management, international entrepreneurship, internationalization, turbulent business environment.

1. Introduction

Modern business management in the global dimension is associated with operating in an environment that is not only national or local, but also international. Even if enterprises operate only on the home market, they still must consider the presence of foreign companies anyway in around your business environment. International conditions for doing business result from dynamic and thriving global processes, which cause that the boundaries of markets are blurred, which means that functioning on foreign markets is probably easier, but unfortunately also demanding. On the one hand, entrepreneurs have better and more convenient access to knowledge and technologies, thanks to

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which they can modernize their own infrastructure and enrich the company's resources, and on the other hand, they are constantly exposed to more intense competition and excessive consumer preferences. For many companies, reality can be difficult and creates the risk of losing stability, because coping with global competition requires constant adaptation of the product and service offerings to the prevailing trends so that the company can maintain its position on the market. In the literature of the subject one can find an opinion that currently, enterprises operate in the chaos era. Everything that surrounds enterprises becomes unpredictable, permanently undergoes transformations, and enterprises must respond quickly and smoothly to these changes [1]. Chaos follows due to the inability to forecast and plan what was once the basis for the functioning of enterprises. Today, company management strategies must be flexible and focused on opportunities that arise in this turbulent environment [2]. Despite the turbulent nature of the modern environment, there are still opportunities that efficient managers can use and lead companies to the path of global success. The fundamental issue is the change in the approach to business management and the attitude to creating demand, opportunities, competitive advantage and the business environment itself, as well as strategic and operational decisions that will prepare enterprises for the operation in conditions of uncertainty, but also in the conditions of significant opportunities and opportunities that the international environment constantly creates [3]. As rightly noted by P. Nowodziński, the turbulent and chaotic nature of the enterprise environment in the modern world results from the prevailing internal and external interdependencies that may favor economic activity or create difficult and complicated conditions, so that some enterprises will receive this positive state of environment positively and perceive it as an opportunity, and others will feel this state as a threat to their future [4].

2. New challenges for enterprises

In order to be able to face the challenges of the environment, enterprises must take into account the creation of an open organization and constantly focused on the environment, searching for resources and knowledge in it, as well as ready to respond flexibly to the needs of today's consumers and establish relationships with other entities. Organizations, which are enterprises, should be flexible and focused on innovation, visionary, and their participants motivated and willing to cooperate. It is impossible to remain isolated in today's market conditions. P. Drucker rightly observes that "ensuring global competitiveness should be a strategic goal of every institution" [5]. Global processes have created the need to establish relations with other economic entities. Contracts, alliances, partnerships, and merging of the organization remain within the dynamics of the dynamically changing business environment. Interdependence and relationships between organizations cause that the boundaries of these organizations also expand, or disappear completely and the activities of enterprises should be seen through the prism of cooperators, suppliers, distributors, business partners, etc. [6]. This means that the functioning of enterprises in the current conditions is largely dependent on the functioning of other business organizations. The era of self-sufficiency of production and autonomy with a permanent fixed market is one of the past, because currently companies wanting to face competition must act in relationships with others, in a network of connections and have to open themselves to new markets [7]. It is important from the point of view of the company's development in terms of international orientation, because the building of business ties enhances the creation of values, gaining knowledge and experience, facilitates access to resources and resources, which favors the penetration of markets. Thanks to better operational capabilities, the company is more willing to change its own boundaries and make strategic decisions aimed at greater product diversification, development of production and moving it to other remote locations, implementation of modern technologies and creating a reputation and brands in the global dimension. All this contributes to the resource potential on which a company should be based, if it wants to meet the requirements of the environment.

3. Management of enterprise in the era of the turbulent environment

What exactly is the environment and why it is perceived as turbulent in the present times can help to give a few explanations of the experts on the subject. MJ Hatch defines the enterprise's surroundings as a being that is outside its borders [8], R.B. Duncan, which indicates the existence of a number of important factors outside the company's boundaries that are included in the decision-making processes and which create the company's environment differently [9]. M. Lisiński [10] indicates that an organization that, as a rule, operates in the surroundings uses

certain opportunities, but also faces threats, at the same time affecting the environment itself with its own activity, which means it can create them in its own way and with its own possibilities. According to the author, the environment is unique, which means that it is not repeated, and therefore each organization should recognize its surroundings individually, that it has a dynamic nature, which, as mentioned earlier, manifests itself in the constant presence of changes and imposes on organizations constant research and analysis of the environment. The environment is complex, because many factors that are in close connection with each other permanently affect each other and finally the environment is controlled, but its level is varied depending on the organization's ability to influence [11]. According to the opinion MJ Hatch surroundings should not be considered next to the enterprise, because the enterprise is immersed in the environment and you cannot separate these two things, and if it is only convention [8]. S. Nahotko [12] divides the surroundings into closer and further ones and details the characteristics of both. J. Dietl makes a similar division [13]. One can clearly see what elements of the environment will be closer to the enterprise and will determine its behavior in everyday functioning, and what they will impose to develop appropriate strategies so that the company can modify its own behavior and make the right decisions. To a large extent, S. Nahotko can see how the environment can influence and create the environment closer to the enterprise, which is consistent with the idea claimed by E. Stańczyk-Hugiet [14] that the environment in general dominates the organization (enterprise in this case) and that this organization should be subordinated to the environment in order to survive. The above-mentioned author also indicates that the environment imposes restrictions on organizations, which confirms the theory of the organization's dependence on resources. Organization, therefore, must adjust its competences to claims and compulsions of the environment, so that the restrictions imposed by them cannot be overcome. The above ideas can be supplemented with the theory of H. Ansoff [15], which defines the company's environment through the turbulence of the company, pointing to factors such as: changeability of the environment, dynamics of change, competition and its intensity, rapid influx of technologies with simultaneous pressure from governments, lobbyists and discrimination on the part of buyers. Nowadays, the turmoil of the surroundings has taken on global dimensions. Therefore, a business that goes beyond the borders of its own country requires international strategies adapted to the challenges of not only its own close external environment, but a broadly understood turbulent international environment. The management of the enterprise according to I. Otola [16] has undergone a significant transformation, which translated into the whole process of leaving the production era to the era of knowledge, where the foundation of management are intangible assets such as knowledge, relationships and information, the organization's environment, network structures, customer focus and processes, or the competence profile, while using ICT to maximize value more than profit and social gain than economic responsibility. I. Otola points to this very important aspect of today's business management - the business environment and social, which is currently chaotic and dynamic and requires flexible management methods that allow the company to adapt to conditions based on interdependence, as well as establishing relationships within a network of connections and efficient operation from contemporary managers and management professionals. Today's enterprise must be based on the knowledge of innovation and cooperation, and deviate from the traditional approach based on the competitiveness of products. L. Knop [17] clearly emphasizes that today's cooperation of companies takes place in a turbulent environment and therefore requires original, modern and relevant to the requirements of the environment skills and rich knowledge. Not infrequently, these skills can be found only outside of enterprises, in a distant environment and as opportunities that have a chance to emerge when cooperation networks have already been initiated and further shaped on the basis of trust, flexibility and consistent action. A. Wójcik-Karpacz [18] also mentions the strength of cooperation and the network of connections, which stresses that for companies wanting to enter foreign markets, it is precisely the establishment of cooperation with a foreign partner that is most helpful, especially in overcoming barriers to internationalization. The author points out that, in essence, cooperation relationships in the strategic dimension allow enterprises to increase their competitiveness in an environment that imposes such and no other conditions. This is all the more important from the point of view of today's escalation of competition in the global dimension, a much shorter life cycle of the product and a larger index of technological change. Considering the turbulence of the environment, M. Rzemieniak [19] points to the importance of implementing new concepts of creating competitive advantage and creating new business models that will allow enterprises to gain operational efficiency and business vision based on the necessary observation of the environment.

Observation of the environment is an indispensable element of the company's operation and should be continuous and comprehensive in order to capture opportunities and threats, and adapt strategies. By analyzing the environment, the enterprise is more ready to receive signals in a flexible manner, thanks to which it will be more ready for any shocks and crises, and moreover, it can respond to them wisely and constructively, which in turn will allow to develop better predispositions to achieve goals [14]. The enterprise's environment is, therefore, not only variable and complex, but also determines the business strategies of enterprises and imposes the necessity to create new concepts and new business models, taking into account the boundlessness of the environment - having a global dimension. The conditions of globalization impose on enterprises a change in the whole system of decision making and a far-reaching and better-quality way of management. Only then can the enterprise count on stable functioning in global conditions and gain a competitive advantage [20]. The process of building a competitive advantage must take into account an appropriate human resource, contacts with partners, access to capital and investment opportunities, as well as a resource of appropriately boiled and rational strategies [21]. A modern enterprise, in order to respond well to the variability of the environment, should accumulate appropriate competences:

- the ability to quickly perceive market opportunities and threats resulting from the environment and the ability to categorize signals coming from the environment due to their positive or negative overtones;
- the ability to reconfigure available resources and initialize and modifying key concepts and ways to implement them;
- dexterity in including visionary for operational management;
- the ability to evaluate the ways and scope of using resources and the potential to acquire them from the environment [22].

4. Issues concerning strategic management – study results

The research taking into account the issues of strategic management in relation to the functioning of Polish enterprises in the international business environment, which was the essence of internationalization of enterprises, was implemented in 2016. The survey covered 114 companies in Silesian Voivodeship, both micro, small, medium and large, none of which was an economic entity with foreign capital. CAWI and CATI techniques as well as direct interviews were used to answer specific questions. There were 35 micro-enterprises, small companies were 28, 36 were medium and 15 large enterprises. 45% of surveyed companies deal with services, 10% combine services with production and trade, 20% of the companies themselves are involved in the production, 5% of enterprises indicate production together with trade, and similarly 5% of companies deal with production and offer services at the same time. Trade alone carries 9% of enterprises, 6% trade with services. 21% companies deal with the production itself and about 10% of all surveyed enterprises trade. Other companies indicated combinations of activities. Taking into account the fact that business environment may change dynamically and firms should somehow be able to react quickly and effectively to these changes, the entities were asked about their strategies of management which allow the company for maintaining the position on the market or even improve its functioning and attract more customers. Such actions can be regarded as strategies adapting the company to the business realities, clients expectations and market fluctuations. The gathered information is presented in Figure 1.

The vast majority of the surveyed companies definitely focus on the meeting the clients requirements, which basically means attracting new clients or keeping those who are by offering them cheaper products or services than the competitors (34%). At the same time, the company is aware of the act that offering the unique variety of products for the demanding number of customers can be a strategy for gathering benefits and building the market position. Such approach is claimed by more than a quarter of the surveyed entities. What is more, the companies admitted (18%) that price does not play a significant role if the keeping the customer requires offering greater benefits. This strategy is more important in the process of building the position on the market or strengthening such position by creating the good opinion and value of the company. 13% of the surveyed firms claimed that their strategy for the competition in the market is attaining the position of the leader in costs, especially in the narrow segment. Only 8% of the entities form the survey could not specify any strategy, action or tactic of management they involve. Furthermore, the companies were asked if they include actions taken in the international market, which means, whether the companies actually take into account operating outside the domestic market if this means new

management strategies. The aim was to find out whether exploring the foreign markets result in strategies oriented towards them and if such stratagems can bring more profits and improve the functioning of the company.

In order to identify what sort of strategies the surveyed enterprises involve in their functioning in the international business surroundings, the question about the methods or/and tactics the companies take was asked and the gathered results are presented in the Figure 2.

What has been noticed during the survey is that the companies put the emphasis on developing their operations internationally involving basically export as the main strategy to expand business and search for new clients on different markets, including foreign markets. Another popular strategy for expanding business was cooperation and partnership with other entities, including the foreign one, in order to achieve business progress and enter markets with different demand and new business opportunities. Evenly common strategy was import or using own resources in the process of improving the company's business situation. Both were found by 10% of the surveyed companies as the good tactic of changing the firm's orientation towards new markets and new clients. Such an approach was meant to bring more profits and improve the company's position on the domestic market. The minority claimed that direct investing or entering markets with own plant, as well as fusion, can bring benefits and improve the company's business situation if the surroundings are not favorable. Less than 5% of the surveyed enterprises admitted that such actions can results in expected outcomes.

The strategies taken by the company should be preceded by certain arrangements or steps which would help to develop an action plan, i.e. a strategy pool. According to the gathered study results, the companies take the whole variety of measures in order to develop the most convenient strategies. The Figure 3 presents the study results. What can be noticed, the basic actions involve scanning the surroundings and evaluating the company's' reality in terms of the resources, market demands, contacts and implementation of plans, controlling issues or general business goals.

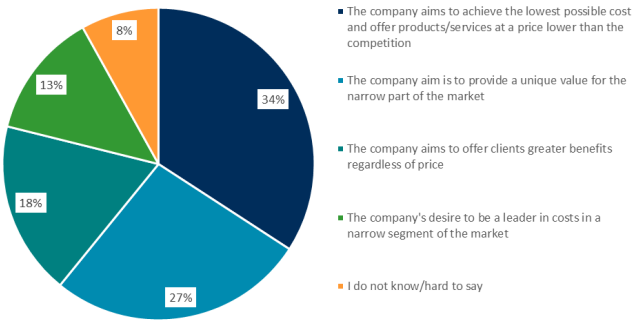

Fig. 1. Strategical goals of management of the company in the changing business environment

One can notice the significance of knowledge about the business environment, which for the majority both collecting information about the surroundings, as well as, examining the changes ongoing are the most important actions preparing the company for implementing strategies. Planning, its evaluation, controlling and execution of plans are also imperative in the process of management especially if the functioning of the company takes place in the turbulent environment and has to deal with the strong competitiveness. What is quite interesting in the results is the fact that the companies admit the important role of competitors who enter foreign market and foreign market's environment itself as the inspiration of implementing strategies improving and developing the functioning of the company. One can assume that foreign market can be a stimuli to change the company's approach and its objectives which, in turn, may improve its position on the market or develop better outcome. 10% of the surveyed companies pay attention to the regular observation of the environment involving steps to provision changes and possible turmoil and 9% regularly controls the process of employing the strategies in terms of their effectiveness and current results. That proves the companies consciously take action and are prepared for the changes ongoing in the business environment.

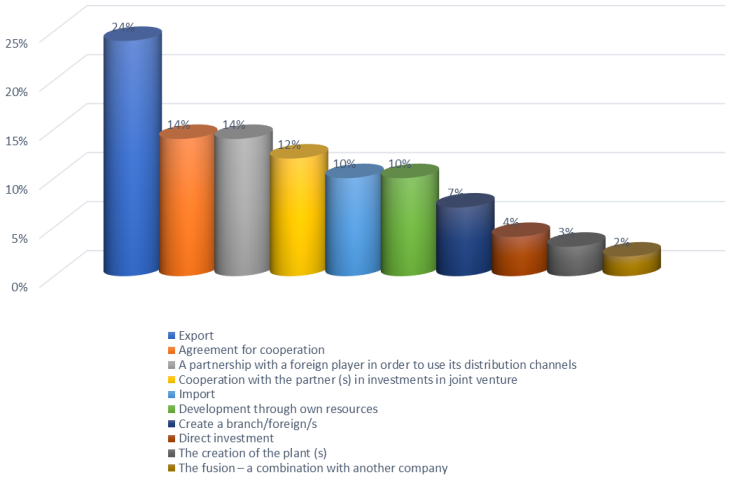

Fig. 2. Strategies of developing the market position in the international business environment

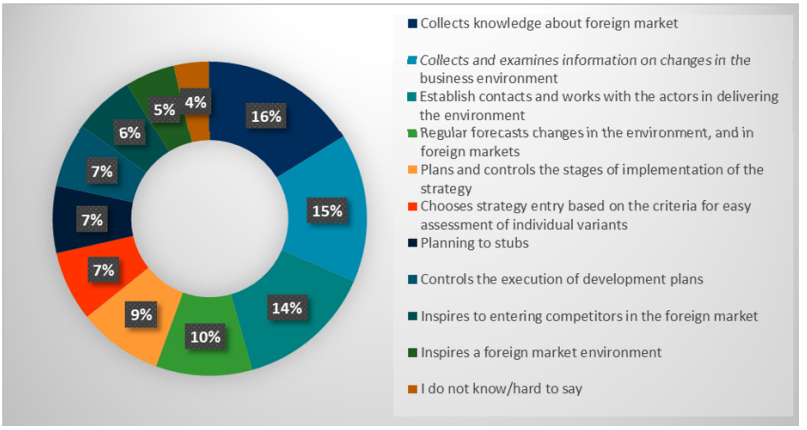

Fig. 3. Groundworks for the strategies of management in the international business environment

Conclusion

The author presented in the article the strategic management approaches in the management sciences as well as related issues with the management of the enterprise in the international environment, taking into account its turbulence and uncertainty. There were presented and analyzed the activities of Polish enterprises in the Silesian Voivodeship initiating the functioning of enterprises on foreign markets in the context of resources and occasions emerging and used in the international environment. The study results showed that the companies are open to strategies helping improving their functioning on the market. Furthermore, the companies include in their operational plans foreign market and their find the international environment as the se of chances and challenges. The taken strategies were a sort of an attempt to answer the challenges faced by enterprises in order to develop and expand their operations on domestic and foreign markets, which nowadays must meet the conditions of the turbulent environment and constantly monitor dynamically the changes taking place in it. The companies seem to be aware of the fact that nowadays, the challenge for entrepreneurs is to function in an international environment, which for many business entities will be an opportunity to gain new sales markets, new clients and making good business relationships. Developing activities abroad may become an asset of the company and effectively strengthen its position in the home country, generate much more income and improve management skills, which in fact brings

huge benefits for the state market economy in the economic dimension, as well as in the political dimension, because companies in foreign markets also becomes the showcase of the country from which the company comes. Therefore, it is difficult to divide the issue of management of the company into national and international, because the prevailing global trends make the enterprises operate internationally in a global dimension. Businesses that are active and developing in terms of consumer expectations are fully aware that the modern consumer "thinks globally" and expects access to products from around the world. Therefore, the enterprise should naturally expand its activity in a way to meet the diverse and complex needs of consumers. The vast majority of companies believe that both the collection of information regarding changes in the environment and the knowledge about the foreign market is extremely important at the time when the decision to start operations on foreign markets is made. In addition, according to the opinion of the surveyed companies, it is equally important to establish contacts or relations with other entities, thanks to which the company gains the opportunity to analyze the foreign environment. What's more, companies also recognize that regular forecasting changes in the environment is just as important as gathering knowledge about foreign markets. Summarizing the above results, it can be assumed that Polish enterprises oriented to foreign markets prefer conscious and well-targeted action on these markets and do not decide on spontaneous action without knowledge of the market. Such an attitude may, therefore, create the need to collect and organize appropriate resources that the company will be willing to exploit in order to enter foreign markets.

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Interaction between Identification of Strategic Change Directions and Change Management Processes in Theory and Practice

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Abstract

The article analyses the field in which change manifests in organisations in order to identify strategic change directions in change management processes (4): by initiating, identifying institutionalising and assessing change results. The theoretical analysis revealed the lack of a holistic approach to assess interaction in researching identification of strategic change directions and change management processes in organisations. On the basis of the theoretical framework and the research findings, the result of the analysis was the model of "Interaction of identification of strategic change directions in change management processes". This paper makes an ambitious attempt at highlighting the shortcomings in change management competences in the organisations, which seek to restructure or optimise their operational processes leading to reduction of operating costs; the proposed model will allow to identify change management processes and to prepare preventively for change management.

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Keywords: strategic change directions, change management processes, model.

1. Introduction

The extent to which the problems has been researched and the main research question. The research which addresses traditional organisation management theories (Beckhard and Harris [1]; Siegal et al. [2]; Everard and Morris [3]; Fullan [4]; Kotter [5]; Euchner [6]) examines the topic of change management in a general way and

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discusses in greater detail only the issues of containment of the change process. Various structures of the change process highlighting the importance of phases in the change process are usually identified and include three-step (unfreeze-change-[re]freeze) or four-step (initiation, implementation, institutionalisation and outcomes) main structures, which are further subdivided (into preliminary diagnosis, foreseeing the future, description of the present, identification of differences between the present and future, managing change, and assessing and controlling change) for deeper understanding of the process. However, according to de Graff and Kolmos [7], it could be said that while the manifestation of change management processes is associated with the design of new products or minimisation of production costs in classical management, so change management in modern organisations should be analyzed and interpreted in a broader context. Today, when organisations transcend national borders and become transnational (Sakalas et al. [8]), the main managerial aspect of the strategic vision comes to the fore and one of the essential managerial duties becomes to highlight the directions of strategic change and on their basis to build a change management strategy in an organisation.

When conceptualising the theoretical insights which show contemporary approach to change management in organisations, the role of strategic changes becomes significant. According to Išoraitė [9], this is the most important area of organisational change related to the implementation of a new strategy. Following the analysis of the researchers (Fenton and Langley [10]; Hamel [11]; Al-Haddad and Kotnour [12]; Kryger [13]), strategic directions of change are revealed as a whole complex which defines the planning function of the organisation, its mission and vision. So the common aim of change management – organisational improvement through adjustment of how procedures are performed (Voehl and Harrington [14]) – should be supplemented with the statement about the identification of the strategic direction and its realisation by the organisation. The examination of scientific literature (Baležentis [15]; Yuan [16]; Dobbs [17]; Wang and Zheng [18]) revealed that the field of identification of the strategic directions of change in organisations involves the analysis of external (micro and macro) and internal organisation environments (Coghlan et al. [19]; Kryger [13]), because, according to Coghlan et al. [19]), for the strategy of the organisation to include awareness and construction of strategy – it must become the matter not only of the managers, but also of subordinates. It is also important to prepare a description of the situation of organisational change and to support the strategic continuum, which would include fast or slow alternatives of change implementation in the organisation (Kotter [5]).

The authors use the comparative analysis (theoretical and practical) and qualitative method of research to address the main research question on the construction of the model. The analysis of the interaction between strategic change directions and change management processes showed the lack of a systemic approach, conceptual conclusions or a broader applied research, and also uncovered methodological loopholes. The present research aims to highlight the research problem, which subsequently requires assessing new conceptual insights which reflect the interaction between the identification of strategic change directions and change management processes in organisations. Given the research problem, the main research question is how to substantiate theoretically and verify empirically the field, in which interaction between the identification of strategic change directions and change management processes in organisations manifests, through the construction of the model based on a systemic approach, categorisation of elements, and structural analysis.

The research calls for a scientific debate by discussing findings of the research and reflecting on the examples based on Lithuanian companies.

2. Substantiation of the relevance of the research and theoretical insights

The analysis of scientific literature helped assess the need for interaction between manifestation of changes in companies and strategic change directions in order to achieve strategic objectives of the company. Consequently, the essential duty of managers and employees of a company becomes to define their strategic change directions and on their basis to build the change management strategy in the organisation. It was identified that the concept of the strategic change direction includes several dimensions: the strategic change directions firstly unfold as the entire complex defining the company's planning functions, mission and vision; secondly – as long-term restructuring of specific fields and activities of a company; and thirdly – as anticipation of new changes. When conceptualising change directions, the authors (Miknevičiūtė and Valackienė [20]) revealed that the basis for identifying strategic change directions is the analysis of the company's external and internal environment, which makes it possible to see

newly emerging development trends in the business environment and to envisage strategic change directions. When identifying strategic change directions, it is necessary to involve employees of the company in the process. Identification of the company's strategic change directions begins by defining the environment of changes that are already taking place in the company. Subsequently, it is necessary to delineate the methods and measures of containing changes. Theoretical insights are formulated and explain the strategic change management opportunities in companies through the definition of the strategic continuum matrix, which highlights fast or slow change alternatives in companies.

The aim of the research is to explore the interaction of change management processes by reflecting on the strategic change direction in the company.

Representativeness of the research. Companies of the manufacturing sector (whose activities are covered under codes C10-C33.20 of the Classification of Economic Activities) of Panevėžys city and district municipalities were selected for the research. The secondary analysis of the statistical data revealed the general set of (N = 511), in which 16 companies were statistically significant according to the research criteria: UAB Komex, UAB IOCO Packaging, UAB Plastara, UAB VAIPOLIS, UAB Nestika, UAB Polimaksas, UAB Nika, UAB Levendra, UAB Rodvita, UAB Bengidis, UAB Alšasta, MB Balplast, UAB Berkutas, company of Jonas Augustinavičius, UAB Kajonas, and UAB Plasmigida. Sources for the secondary statistical data analysis: Research and Higher Education Monitoring and Analysis Centre (MOSTA, 2017, available at http://www.mosta.lt/lt/tyrimai/ataskaitos [viewed 2017-12-01]), Statistics Lithuania (2017, available at https://osp.stat.gov.lt/statistiniu-rodikliu-analize#/ [viewed 2017-12-08]). The case study was conducted (February–March, 2018) at one of the companies – UAB Komex. UAB Komex was selected as a leading manufacturer of specialised protective packaging in Lithuania, with 25 years of experience, exports and new product development as clearly identified strategic change direction.

Criteria: readiness of a company to manage change, change implementation process, change institutionalisation process, change evaluation results.

Indicators: change implementation and management group, plans/strategies for change implementation, communication level, situation analysis, the level of employee readiness, work planning, control, actions for successful change implementation process, managing resistance, actions for making changes part of standard practice, corporate culture, change testing, assessment of satisfaction, advantages of implemented changes.

Data obtained during the in-depth interviews are analysed using the **qualitative content** analysis. According to the change management phases highlighted in the change management theory, the guidelines of in-depth interview were grouped into **four lines of inquiry**:

- initiation of changes
- change implementation;
- change institutionalisation;
- change outcomes.

The first line of inquiry aims to analyse the first phase of the change management process – initiation of changes. In scientific literature (Grybienė and Šimbelis [21]; Fullan [4]; Martinkus et al. [22]; Euchner [6]) this phase is described as the beginning of change, when a decision to make changes is made and ideas are generated. Initiation of changes is determined by the need to renew the process, the level of readiness of human resources, and the availability of resources. In order to reveal the most important actions aimed at the initiation of changes by the company in question, the following questions were asked during the in-depth interview.

1. Is there a change implementation and management group in your company?
2. Are changes planned and strategies created in advance in your company?
3. Is there any communication with employees prior to the implementation of certain changes and are their opinions and needs taken into account?
4. What situations usually motivate initiation of changes?

The in-depth interview showed that UAB Komex has a change implementation and management group. The group operates on a continuous basis, but depending on the direction of change and the workshop in which the change is implemented, the composition of the group and number of its members (on average 4 persons) may change. Sometimes external professionals for the implementation of a particular change are recruited. Such decision

is supported with the argument that "being inside you may not notice everything, while it is easier for the outsiders, people not employed by the company to see if things do not work or how to work differently". As far as plans and strategies for changes are concerned, it was established that only about 20% of the changes in the company were planned in advance and preparations for changes were made: material, financial and human resources and responsibilities were allocated. This was in the case of more ambitious changes – installation of new manufacturing equipment or development of a new product. The remaining 80% of changes take place daily; they are not pre-planned and therefore call for prompt decisions.

The interview showed that when the company initiates changes, it devotes considerable attention to communication with employees. According to the director general of UAB Komex, each employee knows best how to improve his work performance and what he needs for it. Employees must have an opportunity to contact their direct manager, express their opinion, and make proposals.

In terms of the situations which lead to initiating changes in the company, it became clear that this was mostly determined by external forces: competitors' actions and changes to legal requirements. The biggest changes arise from the market, i.e. changing needs of consumers. The company continuously monitors market trends and the new products it can offer.

To sum up the processes underlying the stage of initiation of changes it can be said that the company is open to changes and performs actions which promote initiation of changes: it has formed a change implementation and management group, prepares plans and strategies for changes, urges employees to voice their views and offer proposals, and it monitors and adapts to changes taking place in the company's environment.

The second line of inquiry reflects the second phase of the change process – change implementation. This phase can be interpreted as practical implementation of changes, which is significantly affected by human, financial and material resources and also by the accumulated knowledge, competences and skills (Grybienė and Šimbelis [21]; Maes and Hootegem [23]). During the implementation of changes it is essential to observe the plans and responsibilities and regularly monitor progress. In order to identify the most significant features of change implementation in the company in question the following questions were asked during the in-depth interview:

1. Are the knowledge and competences of employees and their level of readiness assessed during change implementation?
2. Is it necessary to observe any specific timetable during change implementation?
3. What is the level of control exercised during change implementation?
4. What are the main factors that ensure successful change implementation?
5. What are the measures to reduce or eliminate the employee resistance to change?

In terms of the knowledge and competences of employees and their level of readiness it was identified that the company pays attention to competences of employees. If there is any knowledge or competences required for the implementation of certain changes, employees are trained or specialists with certain competences are recruited. This depends on the scope of the change, its complexity, and whether the knowledge and competences required are close to those required for the employees in their current job.

The interview showed that when the company implements changes of a smaller scale, it does not have any specific schedule and the work is carried out at the pace similar to the works performed on a regular basis. Large-scale strategic changes, however, are implemented differently, preparations are made in advance and schedules are prepared. It is important to mention that during the implementation of changes, the employees are monitored and supervised more closely, more time is devoted to communication, regular consultations, and explanation of the benefit of the change.

The company specified planning as the factor contributing to successful change implementation. The director of UAB Komex maintained that it was most important to plan and strategically map even the slightest potential changes, but "this is a complex process with many challenges arising unexpectedly, for which no timely preparation can be made, and this determines that changes are not always successful".

The in-depth interview showed that the company emphasises communication as the means for reducing employee resistance to change. It is argued that proper communication of the benefits of future changes allow employees to put up with temporary inconveniences easier and to comprehend the meaning of their work. In the opinion of the company director, a frequent mistake that managers make is not to devote any time to communication with subordinates, which is the cause of most conflict situations, misunderstandings and ambiguities: "if you do not

explain to an employee why changes are carried out, he gets offended, he thinks that changes have been introduced through his fault and that he is doing something incorrectly."

To sum up the change implementation process in the example of the company in question, it can be said that planning is most important during the change implementation irrespective of whether the change is large or small. Attention to employees – assessment of their knowledge and competences, regular communication explaining the value of changes, and control – is also significant.

The third line of inquiry reveals the third phase of the change process – change institutionalisation. Some researchers (Fullan [4]; Sjostrand [24]) define this phase as making some activity into a norm, into something taken for granted, and embedding it in direct work. When making changes in an organisation, it is important to ensure that the innovation process would be contained, change would become a routine, and a safe and confidence-inspiring environment would be created for employees. To this end, in order to identify the actions used by the company to consolidate changes, the following questions were asked during the in-depth interview:

1. What actions help to make changes part of normal activities?
2. Is the company's culture important in consolidating changes?

The interview showed that the company does not have any specific action plan for making changes to be accepted and consolidated faster. However, it can be noted that the success of change institutionalisation depends directly on the change implementation process: if no major problems are encountered during the implementation of changes, such changes are likely to be recognised faster. Therefore the company focuses its efforts on the preparation for and implementation of the change. It was also established that the time aspect is important for change institutionalisation: "employees at all levels need some time to adjust to changes".

In terms of the importance of corporate culture, it was said that this was indeed an important factor in consolidating changes. The company must be open to change and must continuously improve its processes, take into account employee proposals and promote change initiators.

To sum up the information obtained during the in-depth interview, it can be said that the change institutionalisation process is directly related to the actions performed during the change implementation phase. Other important factors are corporate culture, whether the company is open to change, and the adaptation period.

The fourth line of inquiry allows to discuss the fourth phase of the change process – change results. The examination of scientific literature (Martinkus et al. [22]; Fullan [4]; Grybienė and Šimbelis [21]) shows that in this phase results achieved by employees or a structural unit of an organisation and benefits are reviewed, pointing out the aspects that need improvement and parts or areas of the activities of the organisation where achievements fell short of expectations or were no benefits were achieved. In order to establish the value of the changes implemented in the company in question, the following questions were asked:

1. Is testing of the change carried out in your company?
2. Did any changes implemented during your work experience in the company fall short of expectations?
3. What are the essential advantages of changes implemented in your company?

The in-depth interview indicated that the company always tested its changes. According to the director general of UAB Komex, testing is necessary to evaluate the effectiveness and benefit of the change. However, he also admits that a considerable part of changes does not meet expectations: "we try innovations, but they do not always serve their full purpose". About 50% of all changes have been accepted and beneficial for the company during the director's work practice.

With regard to the benefits of changes, the following advantages were identified:

- saving of financial resources,
- shorter manufacturing process,
- increased production volumes,
- increased profits,
- job creation,
- improved workplaces.

To sum up the outcomes of change implementation in the company, it can be stated that although not all changes meet expectations, successful implementation and consolidation of changes provide material and financial benefit to the company, increase production capacity and contribute to value created for human capital .

The data of the research were triangulated, i.e. validated through an additional survey (questionnaire), hence, the research dimensions were also analysed using the quantitative research strategy. The survey of the employees of UAB Komex confirms the trends in change management processes identified during the in-depth interview at the company in question. Following the conceptual substantiation and verification through triangulation, the model of "Interaction of identification of strategic change directions in change management processes" (Fig. 1) was developed to strengthen the effectiveness of change management. The model allows to identify change management processes in order to restructure or optimise operational processes and to prepare preventively for change management.

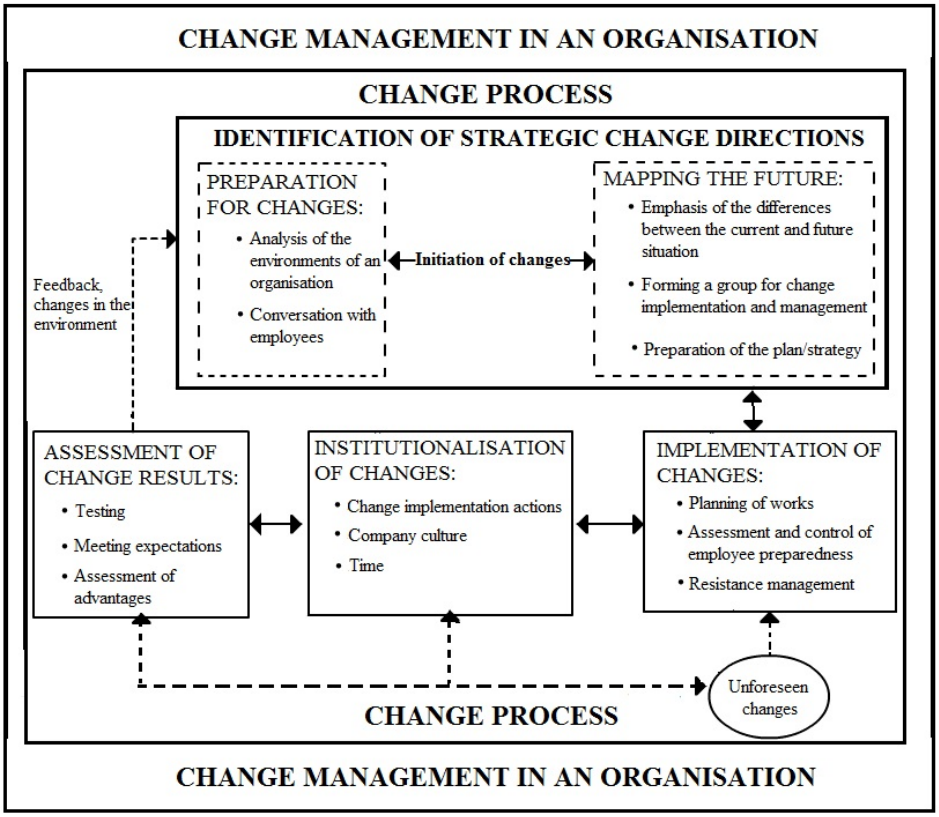

Fig. 1. The "Interaction of identification of strategic change directions in change management processes" model (prepared by the authors)

The model explains change management in a company by defining change processes, which reflect the refined strategic change direction in the company, and by specifying the interaction between processes and direction. The effectiveness of the model indicates that, after the identification of the strategic change direction, the company can prepare for changes properly, identify its future perspectives, and this is the initiation of changes, the first phase in the change management process. The second phase in the change management process – change implementation – must be based on detailed work plans, assessment of the employee preparedness, and control in order to ensure the least resistance. After the change implementation, it is important to maintain corporate culture open to change and devote time to employee adaptation. This moment reflects the third phase of the change management process – institutionalisation of changes. Once changes have been put in practice, it is necessary to verify their effectiveness, assess their benefit and expectations. The fourth phase in the change management process is the assessment of

change results. It is important to emphasise that change management is an ongoing process; therefore, it is necessary to ensure its continuity, promote feedback on changes in place, and systematically monitor the company's environment duly responding to any changes.

Conclusions and discussion

Summing up the theoretical insights which show contemporary approach to change management in organisations, the role of strategic changes becomes significant. Following the theoretical analysis strategic directions of change are revealed as a whole complex which defines the planning function of the organisation, its mission and vision. When conceptualising change directions, the authors of the paper revealed that the basis for identifying strategic change directions is the analysis of the company's external and internal environment, which makes it possible to see newly emerging development trends in the business environment and to envisage strategic change directions.

Conceptual framework helped to carry out the research. The aim of the research – to explore the interaction of change management processes by reflecting on the strategic change direction in the company. Companies of the manufacturing sector of Panevėžys city and district municipalities were selected for the research. The case study was conducted (February–March, 2018) at one of the companies – UAB Komex. Data obtained during the in-depth interviews are analysed using the qualitative content analysis; the guidelines of in-depth interview were grouped into four lines of inquiry: initiation of changes, change implementation, change institutionalization, change outcomes.

On the basis of the theoretical framework and the research findings, the result of the analysis was the model of "Interaction of identification of strategic change directions in change management processes". The model allows to identify change management processes in order to restructure or optimise operational processes and to prepare preventively for change management. The model explains change management in a company by defining change processes, which reflect the refined strategic change direction in the company, and by specifying the interaction between processes and direction.

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New Public Management as a Challenge for Budget Accounting

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Abstract

At the end of the 20th century, there were significant changes in the accounting of the Public Finance Sector. It was caused by a new approach to the management of the sector. It meant a departure from the bureaucratic model of managing the Sector of Public Finance, which was criticised for being thriftless and lacking the possibility of evaluating the effects of the fulfilled tasks. The traditional model of management started to be replaced by the concept of New Public Management. The conducted reforms influenced the accounting of the Public Finance Sector in a significant way. It was indicated that the accounting model based on the Cash Accounting Scheme did not provide enough feedback to enable a proper management of public goods. A full reliable and credible information within the scope could be provided by Accrual Based Accounting (ABAC).

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Keywords: management, accrual based accounting, cash accounting, new public management, community.

1. Introduction

The way of managing the Public Sector determines informative needs of those in power and therefore the approach to information generated by accounting. A traditional way of managing the Public Sector was based mainly on administering it. In the scheme, accounting was based on the cash method. Change of the approach to management of the sector was started with the implementation of accounting models which had potentially higher informative possibilities based on the full or modified Accrual Accounting.

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The aim of the article is an attempt to present changes in accounting triggered by the implementation of New Public Management in public administration.

The article uses the methodology of research in literature and legal acts.

2. The core of New Public Management

At the end of the 20th century, the methods of managing the public sector based on the traditional model of public administration were strongly criticized. The scheme was considered to be outdated and unable to react to constantly changing social needs. Moreover, it was regarded as economically ineffective and wasting economic resources [30].

The system was highly centralized. It was mainly based on following superiors' instructions and written rules. It focused on limits expenditure set to particular goals, which were accepted in the budget. It did not allow for activity results. The expenditure limits of budgetary resources which were planned were more important than actual costs. Those in power had no influence on the increase of the effectiveness of activities of units subordinate to tchem [31].

As a result of the development of the market economy, gradually progressive decentralization of the public authority and therefore strengthening of the home rule, there was an evolution in the ways of managing the public sector referred to as New Public Management (NPM) [9]. The main idea of New Public Management is to put the art of managing ahead of the art of administering in public administration. O. E. Hughes concludes that administering means following instructions, whereas managing deals with achieving results. The term "new public management" itself was first used in 1991 by Christopher Hood in the article "A public management for All Seasons" [8]. In 1992, a book entitled Reinventing Government' [19] written by David Osborne and Ted Gebler was published in the USA. It has become one of the most important publications identifying and describing transformations occurring in the American public sector. The New Public Management is described in the literature by means of such notions as:

- managerialism [20];
- market-based public administration [22];
- entrepreneurial government [18];
- public managerialism [11];
- new management [24];
- business-like management [11];
- market government [19].

The implementation of the New Public Management took place in various countries in many different ways. However, all the reforms had one thing in common. Their effects were noticeable in all the segments of the administration at all levels, local governments and other public organisational units. Countries implementing the reforms of the New Public Management were characterised by the awareness of the conducted mission, decentralisation and resourcefulness. In comparison to the traditional model of administration, the countries which applied the New Public Management had less intentive politics, were less hiercharised and were controlled according to simple rules. It was observed that the function of managing every organization is taking care of its results and organizing available resources in such a way to ensure achieving the best results [6, 11, 20]. As a result of the study of literature concerning New Public Management, the following features can be indicated as characteristic for the new concept: [8] implementation of professional (managerial) management in the public sector:

- clearly stated standards and measures of the conducted activity;
- greater focus on the control of the results of the activity;
- the motive of disaggregation of units of the public sector;
- emphasis on the use of methods and techniques of management already used in the private sector in the public sector;
- focus on a higher discipline and saving while using resources.

New Public Management is defined as a highly rationally justified activities in which choices result from objective and factual analyses of the estimate of all alternatives. The management of the organization in the model in question is based on managing both material resources as well as the human ones, the control of the results in

order to make individuals work in the organization interest. The key notion is aims, which are essential to measure the achieved results [15].

T. Lubińska also emphasises that the basic mission of the new model of management is the increase in efficiency, effectiveness and the growth of the proficiency of public sector activities [16]. In the new concept of management of units of the Public Finance Sector, managers of the units should be oriented on the creation and fulfillment of missions, strategic goals and tasks of the unit as well as pay particular attention to their realization. It means that there is a shift from the bureaucratic (traditional) model of managing units in the public sector to strategic and task management [25].

In the described concept of management, there is also a change in the paradigm concerning the management of finance of units of public administration. There is an attempt to maximise the clarity within the scope of accounting and to relate costs to effects, not the expenditure while determining the results on the basis of quantitative indicators. A clerk is a manager of public issues working out the best results possible at the lowest costs.

Attempts to create a clearer budget accounting initiated the process of implementing accounting models based on the full or modified accrual accounting that were to replace the cash accounting valid for budget accounting. The solutions , commonly used in the accounting of the private sector, concerned the instantiation of aims and results of a unit activity on the one hand, and the rules of their measuring and evaluation of the results of the set goals on the other hand.

It needs to be emphasized that the change in the way of managing the public sector should be reflected in the the change in the way of drafting and implementing the budget, which in turn ought to be concise with the accounting models. In case of lack of the consistency, overproduction or data shortage occurs. It triggers the increase of the costs (in the former) or improper managing of assigned resources (in the latter case) [31].

Accepting the new management model in the units of the Sector of Public Finance requires the acceptance of a new way of thinking among the senior management. Analysis of the subject literature indicated that there were various insights into the problem [14, 5, 26]. A. Bela [2], T. Lubińska [16] emphasised that the implementation of New Public Management concept required focusing on modern methods and on efficient managing public tasks in units of the Sector of Public Finance. It also required applying tools to fulfill task budget as well as being focused on results or effects and using measures determining the degree of accomplishing goals and tasks [1]. Summing up, a person playing key functions in public administration should have such features as [9]:

- strategic thinking, planning and managing;
- the ability to organise their own work in such a way to be capable of conducting self-evaluation;
- the ability to create conditions which are favourable for the development of the organisation and its employees;
- the ability to negotiate, play the role of a mediator in conflics between various groups in local government and outside;
- being a social entrepreneur.

3. Budget accounting according to the Cash Accounting

The Sector of Public Finance consists of units, which perform public tasks and are financed with public resources [19]. These include, for example, state budgetary units, units of territorial government and their bodies as well as subordinate organization units. Accounting plays a very significant role in all the units.

Accounting, as a branch of science is characterised in many different ways. American Accounting Association defines accounting as the process of identifying, measuring, processing and communicating financial information which is useful in formulating opinions and decisions by information users. The information coming from accounting is financial in character and reflects business transactions expressed by means of money [3]. Accounting refers to delivering data which may help the recipients to evaluate the activity of a unit and make rational decisions. It is conducted on a regular basis concentrating on appropriate documents which indicate the existence of particular economic activities in an economic unit. Thus, record keeping conducted within accounting is the most reliable source of economic information.

There is only one accounting. However, due to its wide range of units obliged to keep accounting records, it can be divided into a few types [29]. That is why in the case of units functioning within the Public Finance Sector we can talk about budget accounting. According to Accounting Lexicon – budget accounting comprises the accounting of the government, self-governments and budgetary institutions. Its task is to provide information about budget execution as well as financial plans and financial situation of budget entities [17]. The subject of accounting of units of the Public Finance Sector is phenomena connected with budget execution, i.e. accumulation, distribution and the use of public funds.

The system of accumulation and record keeping of economic operations should ensure the interested parties to have a reliable, dear and accurate information [13]. Its scope is dependent on the accepted and implemented accounting rules. One of them is the cash accounting.

The cash accounting scheme mainly deals with the cash flow. Pursuant to the method, financial transitions and events are recognized in accounts only after financial funds arrive at bank accounts or at the moment of their payment. It results in recording in budgetary accounting only payments made which do not reflect values of the resources used other than financial means or their equivalents. The consequence of the cash accounting is recognizing in reporting first and foremost information concerning the funds or their equivalents in a particular time period, as well as funds at the beginning and at the end of the reporting period. Producing reports on the basis of data from cash accounting makes it impossible to include information concerning unit assets and their sources.

The main weak point of the cash accounting scheme is lack of generating information on liabilities. It results in lack of a possibility to determine the level of maturity in subsequent years, which in turn leads to an apparent reduction of the budget deficit in a given year.

Applying the cash accounting scheme, it is impossible to calculate the costs of provided services as well as operational costs of a unit [31]. Actual payments from a given year must be disclosed in the global amount, regardless of the fact whether they concerned this particular year.

The cash accounting does not provide any incentive to use fixed assets in a more effective way. It is caused by the fact that expenditure on staff costs and investment expenditure are treated in the same way. The fact that the latter will be produced for many years is not taken into account. The weak points mentioned above, such as non-capitalizing fixed assets and failing to report long-term liabilities, make it impossible to present reliable and accurate costs of the conducted operational activity of a unit in a particular reporting period. Moreover, it is unlikely to estimate costs of provided services and to evaluate the results of the activities.

The drawbacks presented above confirm the fact that cash accounting does not provide information on the value of consumed resources . As a consequence, on the one hand, there is no need to apply regulations on measuring and valuation of transactions concerning current assets and on hand. On the other hand, however, some problems connected with enforcing accountability for using public resources occur in cash accounting [31].

Taking into consideration the presented facts, it should be indicated that there seems to be a paradox concerning the cash accounting resulting from lack of plausible grounds to determine the level of limits to budgetary expenditure. Due to that fact, the set limits are frequently exceeded.

The biggest downside of the cash accounting is, according to numerous authors, the possibility of deliberate manipulating the budget result. Such a situation does not encourage to rationally manage funds assigned to expenditure in a given budget year.

Therefore, being aware of the weaknesses of the cash accounting, it would be reasonable to pose a question: why is this model of accounting used in units of the sector of public finance?

While giving the answer to the above question, several factors have to be taken into account. These include: tradition, reluctance to changes or lack of qualified staff. One of the determinants of applying the cash accounting in units of the Public Finance Sector may be also the possibility to manipulate the result of the conducted fiscal policy by people in charge. Using the cash accounting, they may present positive results of the conducted activities and reduce negative effects easily.

The factor influencing sticking to the model is also resistance of the staff of the Public Finance Sector units to any changes, which are associated by them with new duties without getting additional cash equivalent.

4. Challenges facing budget accounting

The foregoing analysis presented deficiencies of the cash accounting scheme. They were also observed while working on New Public Management concept, which criticised shortage of information generated by the accounting system, particularly in the following areas:

- Liabilities;
- indebtedness required in a particular year and subsequent years;
- generated revenue, especially unrealised financially and occurring as prospective impact of the financial measures;
- incurred costs including the ones which are not connected with disbursement of resources;
- asset values controlled by a unit;
- stocks and the control over the rationality of their use;
- measurement bases of the results of activities of a unit and the measurement of the activity effectiveness.

Reported observations concerning the studied accounting model connected with the evaluation of the system of management of the public sector and increasing demand for information led to its modification. They gave rise to an indirect scheme, combining elements of the two major accounting methods, the cash method and the accrual method, called the Modified Cash Basis. The model measures both financial means and all the step preceding changes in the balance, i.e. receivables and commitments.

According to many authors and experts on budget accounting, it would be reasonable to introduce the accrual method to budget accounting in order to achieve essential information to make proper decisions concerning finance management. Pursuant to the Accounting Act [27], units are allowed to recognise all obtained and allocated to them revenue as well as chargeable costs connected with the revenue in a particular financial year, regardless of the time the payment was made. To keep matching of revenue and costs connected with it, assets and liabilities of a particular reporting period include expenditure and revenue concerning future periods as well as costs which were not incurred and referred to the preceding financial period.

It is thought that following the method allows to avoid subjectivism while making decisions concerning the moment when some financial changes occur, triggered by the unit activity.

While analysing accounting systems of other countries, certain evolutions are easily observed. Information system of most countries is based on the cash accounting. Current changes aim at the use of full accrual and the application of business solutions accounting and reporting of the units of the Public Finance Sector. Report directions are determined by International Financial Reporting Standards of the Public Finance Sector and such organizations as: Organization for Economic Co-Operation and Development (OECD), North Atlantic Treaty Organization (NATO) and the European Commission (EC). The arguments in favor of the implementation of the accrual accounting in the Sector of Public Finance include [7]:

- higher reliability of financial information;
- improvement of the management quality;
- multi-year planning;
- current operational management;
- possibility of extensive analysis;
- effective use of information by internal and external users.

It should be emphasized that dynamically changing economic, social and political reality leads to the increase in the number of tasks performed by public sector entities. The need for the task fulfillment, in accordance with European standards and at a socially accepted level, cause that the main goals of the accounting system of the Public Finance Sector are measurements, presentation, analysis and evaluation of social and economic achievement, which generally fits in perfectly with the concept of New Public Management. Due to that fact, new areas of measurement, record keeping, reporting and analysis occur all the time in the accounting system of unit of the Public Finance Sector. One of the areas is the task budgeting [1]. In a broader scope, the task budgeting is considered to be such a budgetary method in which expenditure is aggregated to tasks which have some determined tasks and prepared measures. A limited approach treats task budgeting as a method of planning budget spending in which the increase

in the expenditure planned for a given task must be connected with the growth in the production and the improvement of the results [27]. The main goals of the approach are [10]:

- to ensure a higher efficiency of public tasks;
- to increase the effectiveness of spending public funds;
- to improve the clarity of public finance;
- to provide citizens and politicians with a clearer information concerning undertaken activities and expenditure connected with tchem.

The main role of accounting within task budgeting is to assign costs, expenditure and prospective commitments to perform tasks. Due to that fact, the system should provide information essential for estimating the degree of task realisation and their progress. The consequence of applying task accounting will be a shift of the rules concerning record keeping of costs in such a way to make them adapt to the needs of task budgeting. It should be pointed out that in order to support task budgeting, task accounting has to adapt methods and tools of cost accounting system and management accounting, mainly tools from the area of cost analysis and effectiveness evaluation. The use of methods and tools of task accounting will be dependent on types of a unit, the specific nature of the assigned tasks, the amount of financial means at the disposal.

Conclusions

On the basis of the conducted analyses, it can be stated that the shift in the way of managing the public sector from a traditional one based on administering to New Public Management is a challenge for budget accounting. The cash accounting which is applied in units of Public Finance Sector does no provide information on activity costs, generated revenue and charges resulting from them, accrued interest or the value of physical stocks of current assets. The cash accounting does not make it possible to generate a full spectrum of financial information, essential as far as making decisions and responsibility for managing public resources are concerned. Due to that fact, to ensure appropriate management of the available resources, the accrual accounting should be applied in units of the Public Finance Sector. Implementation of the model means that account books include all economic events occurring during a particular period, regardless of the fact whether they triggered a revenue or expenditure. After all, the reports present a complete picture of a unit covering economic position, financial situation, financial results, net changes in assets and cash flow.

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Air Transport Management in Poland

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Abstract

Air transport is now one of the major elements of infrastructure of domestic-global economies. It is one of the fastest, most expensive, and at the same time most efficient types of transportation – as both a factor and a tool to optimize the so-formed network structure, it offers opportunities to thrive.

Operations of modern economies depend on smooth and swift mobility of goods, services and capital across individual markets. Boom or bust, air transport is a key link between local and global markets, which in turn preconditions their development.

Currently, air transport needs sound management that would lead to the establishment of a state-of-the-art system of communication between the carrier and the purchaser of air services. Developing an air transport management concept is the only way to succeed in the transport sector, known for being difficult and stormy.

The objective of the study is to attempt to present the specificity of air transport management in Poland and to conduct an analysis and evaluation of the current situation on the air service market, including the identification of management methods. In view of the vast scope of the subject, the issues are presented, to a large extent, on the basis of existing airports.

According to the determined aim of exploration the following research question is: "What are, if only they exist, the possibilities of improving the management of Polish air transport?

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Keywords: air transport, management, polish air transport, managemnt history.

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1. Introduction

The Polish market of air services continues to be an area of myriad, intense transformations. The rate at which they occur is a consequence of a combination of external and internal factors, which precondition the behaviour of air carriers and customers, and the operation of airports. When analysing air transport development forecast, we can see a further increase in the number of activities of all market participants. Therefore, in the near future one should expect a strengthened development of flights, modern infrastructure and facilities, new air services and, above all, a growth of the role of Poland on the aviation map of Europe [1].

The market of air transport services features fast development and dynamic growth, which are changing its structure and operating conditions – Figure 1. Airport managers use all means to increase quality of services and meet expectations of the transport branch users. However, the actions they undertake will have the intended effects only when based on knowledge about current market conditions and market needs. Effective management of air transport is expressed by the acquisition and processing of information that originate from, amongst others, targeted research [2].

The 21st century market of aviation services is facing multiple problems, one of them being strong competition. In the light of the above, we can say that systematic collection of data regarding market phenomena, processes and factors is the primary tool affecting the whole market [3].

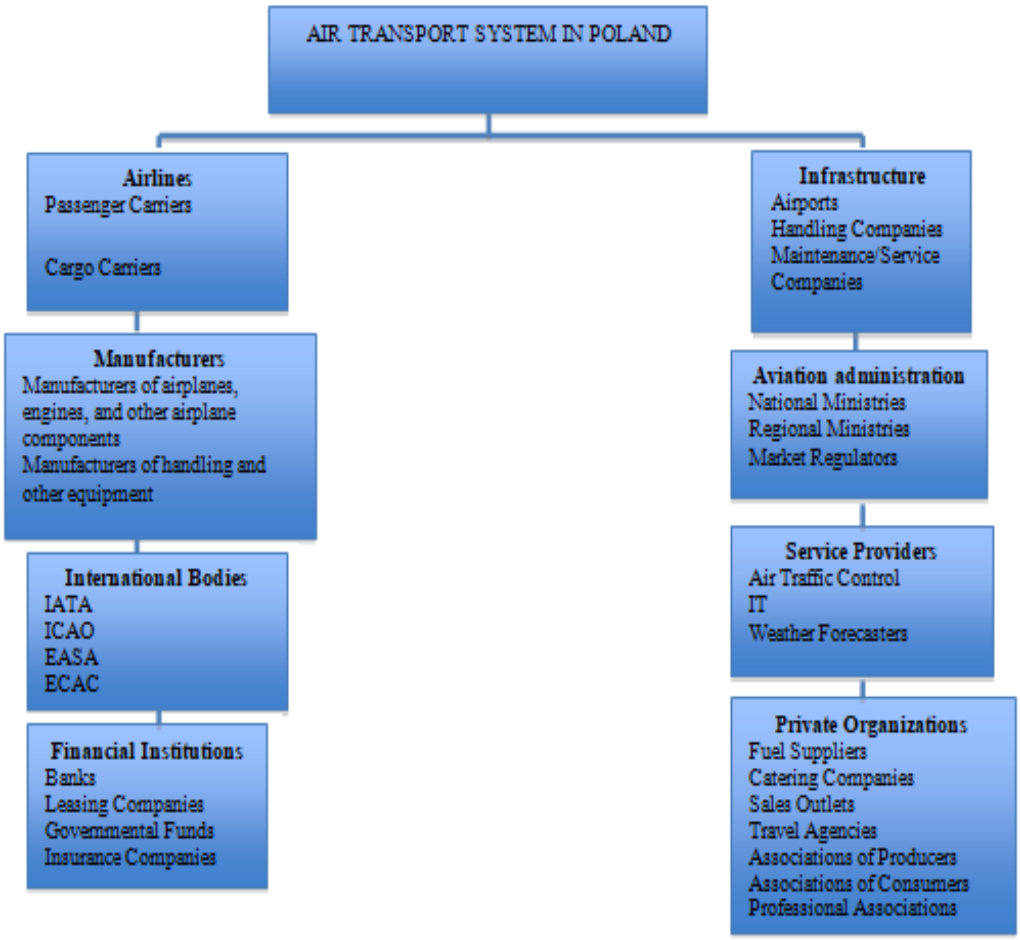

Fig. 1. Air transport system in Poland. Source: own study compiled on the basis of [10]

2. History of air traffic management in Poland

The origins of civil aviation are associated solely with the transport of post, which was delivered by Austrian airlines to Cracow and Lviv, still under the foreign rule. In 1919, there was a failed attempt to establish the National Association of Air Navigation, but a year later Warsaw was included in the network of flights of CFRNA, a French-Romanian line. At the same time, regular flights to Szczecin, which was then located in the territory of Germany, were established. In 1921, Polish lines started regular passenger flights from Poznań to the Free City of Gdańsk and Warsaw. In Poznań, aircrafts took off and landed on the grass lane of the Ławica airport, in operation until these days, which makes it the oldest operating civil airport in Poland. Among the then target airports, there were also airports in Gdańsk-Wrzeszcz and Warszawa-Pola Mokotowskie; however, we can find no trace of them today. The initial years of aviation activity in Poland were first and foremost the years of goods and post delivery – passengers were a mere addition thereto, as demonstrated by the fact than in the year 1921, the 250 flights recorded at the Warsaw airport carried, in total, only 195 passengers.

Nowadays, more and more Poles perceives airplanes as common means of transportation. The times when the fliers were those seeking adventure rather than well-off passengers or those in a hurry, are long gone. No one now gives their farewell before taking off the way one of the protagonists portrayed by Jerzy Waldorff did: *We are flying to Poznań (…). – Remember, the will is in the left desk drawer.*

In the past decade, there have been huge changes in the air transport. Nonetheless, bearing in mind their dynamics, we may not disregard the origins, for the Polish aviation tradition is one of the oldest in the world, as illustrated by the Table 1 [4].

Table 1. History of air transport management in Poland

Item	Date	Event	Objectives/Actions
1.	14/11/1918	Air Navigation Section is established in the Department of Technology, Ministry of Military Affairs	
2.	1919-1922	Airports are controlled by the Management of the Regional National Railway in the Ministry of Railway	
3.	1922	Civil Aviation Department is established	
4.	1944	Civil Aviation Department is established at Polish Committee of National Liberation (PKWN)	Flights are established between Lublin, Białystok, Rzeszów, and Przemyśl
5.	18/07/1945	National enterprise Polskie Linie Lotnicze LOT (PLL LOT), presided over by Wojciech Zieliński, is set up	
6.	After 2nd World War	Department of Civil Aviation, Ministry of Communication – later Ministry of Road and Air Transport, becomes the authority responsible for aviation supervision	
7.	1959	New organization – Air Traffic and Communication Airports Management (ZRLiLK) – is created within the structures of Department of Civil Aviation	Liable for airports, including the whole traffic organization, control, navigation, and infrastructure maintenance
8.	18/05/1959	ZRLiLK, with its seat at Grójecka 17 in Warsaw, officially commences its activities	Investments in the Warszawa-Okęcie airport. Priority – the capital city airport earning an international status. Another goal – to ensure adequate traffic capacity and provide international air road safety
9.	1961/1962	First in Poland training of air traffic controllers	4 people are trained in England to become instructors in Poland
10.	1964	First air traffic control licences are issued	
11.	1966-1967	Practical and theoretical training for air traffic controllers is organized in Warsaw and Rzeszów	The whole territory of Poland is covered with a common air traffic control system integrated with that of the neighbouring countries
12.	1967	Training centre in Rzeszów is commissioned	Regular air traffic controller training programme is introduced

Table 1 (Continued)

Item	Date	Event	Objectives/Actions
13.	1969	Radar area in Poznań is established	
14.	70s	First Instrument Landing System in Warsaw is installed	
15.	Late 70s	More and more equipment from the West is coming to Poland	Radar for approach control by Texas Instruments and French operational positions in CKRL
16.	1987	Rzeszów Training Centre is moved to Warsaw	This measure was taken due to deteriorating social conditions of students in Rzeszów and equipment high failure rate
17.	Late 80s	Foreign trainings run by International Civil Aviation Organization (ICAO) instructors for 15 controllers per year	
18.	1988/1989	New major is created at the Warsaw University of Technology – Air Traffic Organization and Management – at the request of Polish Airport	
19.	23/10/1987	National Enterprise Przedsiębiorstwo Państwowe "Porty Lotnicze" (PPL) is established under the law	Taking over the responsibilities of ZRLiLK
20.	1992	Air Traffic Agency (ARL) is created within the structures of PPL	Managing two domestic airports: Chopin Aiport (Okęcie) in Warsaw and Zielona Góra-Babimost
21.	26/06/1998	New Centre of Air Traffic Management is commissioned	
22.	01/04/2007	Polish Air Navigation Services Agency (PAŻP), created with the structures of PPL and on the basis of ARL, becomes liable for air space management	Air traffic control, air traffic service, navigation equipment supervision, air space organization news bulletins publishing
23.	17/07/2012	Decision is made to create the so-called functional airspace block – FAB Baltica – under a bilateral agreement concluded in Vilnius between the Republic of Poland and the Republic of Lithuania	Baltic FAB – one of the ten European Functional Airspace Blocks established in response to a package of provisions adopted by the European Commission and regarding the Single European Sky (SES). It covers the Warsaw Flight Information Region (FIR) and Vilnius FIR. The primary objective is to maximize the capacity, effectiveness, and efficiency of the networks of air traffic management and the shortening of the length of air routes, while maintaining high level of security.
21.	08/2014	Draft Law on PPL commercialization is presented by the then Minister of Infrastructure and Development, Elżbieta Bieńkowska	It is transformed into a joint stock company with 100% shares owned by State Treasury
25.	2014	Award decision: tender involving purchase of new aircrafts is allotted to the German Aerodata A. G.	A new measuring aircraft is delivered to PAŻP within 15 months
26.	11/2015	Arrival of American Beechcraft King Air 350i supplied by the above company	The old Turbolet L410 is replaced. The faster relocation to task destination and the ability to operate at a much greater altitude facilitates radar control. This allows for performing higher flights, increases crew comfort, and enables control system operation from the air at high temperatures thanks to a hermetic and air-conditioned cabin.
27.	2016	Introduction of a vertical division of space, which involves assigning flights at higher and lower cruising levels to different controllers	Increase in traffic capacity of the Polish airspace

* Source: own study compiled on the basis on [4–5]

Due to the pressure exerted by the European bodies and a continuous strive to minimise the costs, over the course of the following years new ideas regarding the streamlining of air traffic control have begun to be implemented. One of them includes a remote flight control, which allows for small airport operation without the physical presence of controllers. Thanks to state-of-the-art technology they are able to control an airport from a distance of several

hundred kilometres. In Poland, however, such technology remains at the concept defining stage.

3. Specificity of airline management

Due to its specificity, airline or aviation enterprises have systems of management which varies from those in organizations conducting their activities in other branches of economy. Given the environment in which they operate, we ought to note that airline management is an arduous and convoluted task. Many airlines are facing economic problems, whereas the majority of air carriers have serious liquidity issues. With respect to the above, for many airlines survival has become the principal and the only right strategy to pursue. Difficult financial situation has forced some air carriers to take up the following corrective actions:

- reduction of employment;
- winding down unviable routes;
- overbooking;
- savings with respect to catering and gifts offered to passengers on-board;
- removal of unnecessary assets – sale of rights to take-offs and landings.

While analysing the aspects of management guiding airline behaviour, it is worth to indicate the factors which are particularly important to its proper conduct:

- ensuring adequate levels of security to aircrafts flying within a given airspace;
- ensuring regularity and punctuality of air traffic;
- developing emergency response plans;
- efficient infrastructure and staff management;
- to avoid mistakes, learning from other carriers' experience [6].

At the market of air services, the preparation and further implementation of a strategy adopted by a given organization to manage more effectively involves the following areas, as presented in Figure 2.

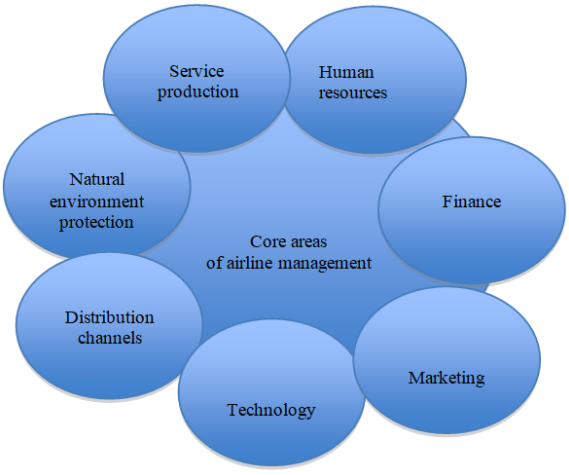

Fig. 2. Air transport system in Poland. Source: Own study compiled on the basis of [6]

Despite the fact that the air service sector abounds in difficult situations, there is a number of new cheap air carriers, such as EasyJet or Ryanair, which are now in competition with British Airways and Lufthansa. When analysing the organization and operation of best air carriers, we ought to present the key factors relating to high-efficiency airlines (Table 2).

Table 2. Key factors relating to high-efficiency airlines

Item	Factor	Characteristics	Effects
1.	Aircraft	High utilisation rate: - short and long-distance routes, between 9 and 10 hrs - long-distance routes, 15 hrs	
		Reduced number of stop-overs	Shorter time of travel, Fuel savings, Shorter customer service time, Minimization of customer service costs.
		Low level of diversification of the flying fleet	Easier aircraft maintenance, Shorter overhaul/repair time.
		One base = one hub	Increased flight operation, Increased rate of airplane punctuality, Facilitated implementation of logistic undertakings
2.	Crew	Minimization of passive transfers and night downtimes	Increase in the flying crew utilisation factor - 700-900 block-hours
3.	Technical measures of flight protection	Critical mass,	
		Allocation of bases,	Easier operation and overhauls/repairs of aircraft
		Standardization of aircraft,	
		High degree of automation of technical workshops.	Easier and faster work of air technicians and mechanics.
4.	Sale and distribution of services	Online ticket sale at lower prices, Price structure simplification, Implementation of ticket booking and sale telephone services.	Satisfying customers' needs and expectations
5.	General support	Simple, transparent planning process	
		Simple and clear organizational structure	High flexibility of operations
		Red tape minimization	
		Offering simpler products and services	

* Source: Own study compiled on the basis of [9].

Effective management from the point of view of airlines is expressed by the performance measures presented in Figure 3.

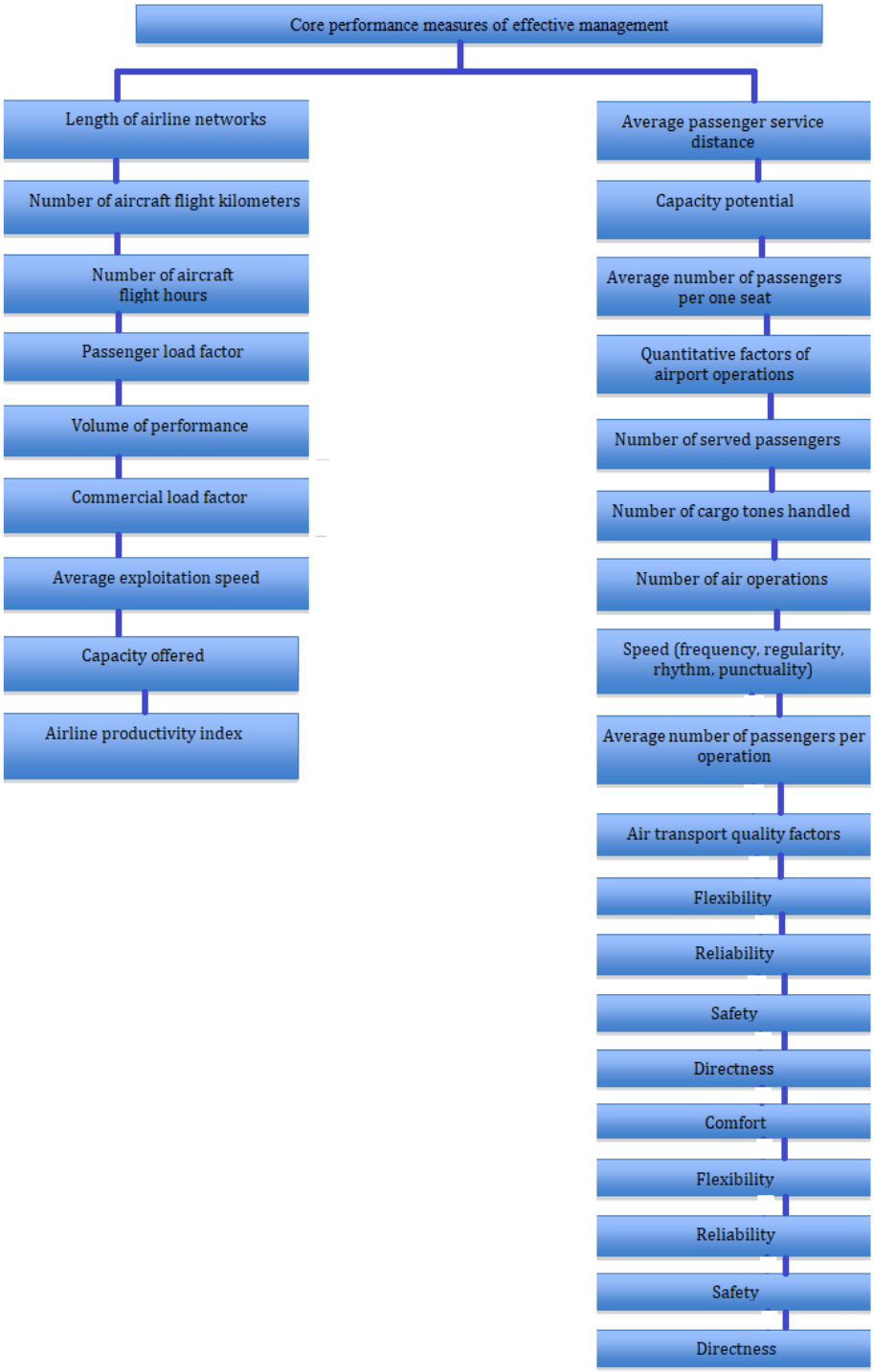

Fig. 3. Core performance measures of effective airline management. Source: Own study compiled on the basis of [6]

4. Conclusions

In view of other European Union member state data, it is safe to say that the Polish air transport market has developed rapidly over the past decade. The characteristic features of the Polish market are great social potential, somewhat different from EU standards, GDP growth, and Poland's economic location. Year by year, we have been witnessing a growing influence of air transport on economy, associated with an increasingly evident interrelation between regional development and airport development. A number of various actions have been undertaken with the intention to adapting air transport services to the expectations of all market segments [7].

There are few sectors as volatile as the aviation industry. For years, the changeable nature of prosperity has been affected by numerous factors, amongst them by: technological innovations, investments, fuel prices and the law. Nowadays, owing to fierce competition resultant from a deregulation of the internal air transport market in the United States in 1978, the air transport market is undergoing a metamorphosis. The European Union undertook similar actions as late as in 1997, which led to a complete freedom of the airlines with regards to setting destinations and pricing policies.

Today, it goes without saying that all airlines concentrate on development, profits and, most of all, market survival. Hence, they need an adequate strategy of operation, i.e. management. It is indispensable from the perspective of the ongoing changes in both the area of competition and airline macro-economy. Without any doubt, all airlines require new, dynamic and, above all, creative development concepts, which will be based not only on intuition, imagination or courage, but also, and most importantly, on knowledge and innovation, which oftentimes break the present-day management stereotypes. Now, it is the strategy created with swift and effective operations of a 21st-century company based in turbulent surroundings in mind that has become the sum and substance.

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Organization's Agility Towards Developing the Relationship Sales Model in the Contemporary Enterprise

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Abstract

The basic foundation of building an "agile" management in the organization is the knowledge creation and the diffusion process. Knowledge is, in fact, a kind of "lever" of an organization's development and a source of its widely understood potential. An organization's "agility" grows from the knowledge management processes and can be identified e.g. in an adaptability of this organization to endo- and exogenous changes. That is why many contemporary organizations try to find many potential solutions on the market to maintain customers, especially in the purchasing process. The relationship sales model is divided into many levels and is closely connected with building trust and keeping customers within the organization. This is a theoretical and empirical article and its objective is to place the relationship sales model in the contemporary enterprise, as well as specify the role and importance of organization`s agility in the development of trust and relationship between customers and the organization. The article tries to answer to, among many others, the following questions:
1. What are the factors of the organization's agility?
2. How to build the relationship sales in the contemporary enterprise?
3. What are the determinants of the customers service and mistakes made by many organizations in the process of the relationship sales?
The research is based on own interviews made with top and middle managers in the contemporary enterprises in the central-east part of Poland (two voivodships), organised from February to October 2017.

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Keywords: organization's agility, relationship sales model, contemporary organization, trust in sales.

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"Perfection is not a one-off act, but a habit"
Aristotle

1. Introduction

Nowadays, a relationship sale has a different, new meaning. With the various ways of selling, attention should be paid on the quality of services. This quality is built on a number of factors, ranging from the high standards of materials that product is made of, its functionality and ease of use, the sense of security, and what follows – of an excellent and professional customer service.

It is not an effective way to sell the customer once. The point is to make the customer to be satisfied with the product, to recommend it to others, and comeback to the same organization when a re-purchase is needed. Relationship sales differ from classic sales in that they do not exert any pressure on the customer, but are based on trust. That is why, the "agile" organization model is considered as one of the contemporary and basic patterns to shape and improve an organization. The basic foundation of building an "agile" management in an organization is the knowledge creation and the diffusion process. Knowledge is, in fact, a kind of "lever" of an organization's development and a source of its widely understood potential. An organization's "agility" grows from the knowledge management processes and can be identified e.g. in the adaptability of this organization to endo- and exogenous changes and creation of the excellent communication contact with its stakeholders [27].

No matter what kind of product or service the company offers, customer service plays a key role in sales. Based on the statements of those involved in the various industries in which customer service is used, it is known that customer service is both important before, during and after the sale. The key to attracting new customers is to care for current customers. If they like the service of the seller, it is often the case that they recommend another product offered by the same entity. The best organizations have mastered the ability to turn existing customers and after-sales contacts into new relationship sales. A good way to maintain this post-sale experience is to post "a thank-you" note for your purchase, and after two weeks a call to the customer to thank him/her again and see how is the product purchased. These are the basic actions that every salesperson should perform [2].

In order to turn potential buyers into real customers, the organization should take care of them in a long run so it has to be very "agile" in its activities (product creation, sales process, after-sale care and customer experience). The results of good customer service and relationship sales are: the increase of sales and in numbers of customers. In a global, competitive market, a major focus should be placed on customers' needs and the quality of customer service. Meet their requirements, strive to achieve their satisfaction, create an excellent experience are the easiest and most effective way to achieve the above mentioned. It turns out that such a service is built on many factors and requires constant training of modern sellers to reduce the number of mistakes that can discourage the clients for placing a new purchase order, as they continue to commit numerous mistakes despite many years of experience in the sales process.

The article has a theoretical and empirical character, and its aim is to locate the relationship sales model in the process of creating "agility" and shaping the development of the enterprise. The scope of the research concerns the presentation of elements defining relationship sales, contemporary customer service, as well as errors that companies make in the process of adapting to changing market conditions. The applied research method is a case study – the article uses a fragment of the research conducted on a selected group of managers in Poland, which may be the basis for generalization processes. The above-mentioned research method is supplemented by the analysis and synthesis of specific test results.

2. Agility attributes of an organization in the context of its development

In the literature of the subject, as well as in practice, the "agile" organization model is currently distinguished, often referred to as the "smart" organization [28] or – not quite correctly – the "learning" organization. The model of the "agile" organization contains the attributes of the "learning" organization, which is presented in Figure 1. The "learning" organization is not fully the same as the "agile" organization. In addition, the "agile" organization model is often identified with an "intelligent" organization – nevertheless, the "intelligent" organization is characterized by higher level of technological advancement (within the meaning of ICT technologies participating in management

processes), i.e. full automation of management processes (Figure 1). Therefore, the "smart" organization model is more demanding than the management and lower level employees in the organization (including the involvement of specific resource classes in the construction and development of infrastructure, e. g. IT) (based on [5], [20]).

Errors in the interpretation and definition of the above-mentioned models result mainly from the fact that the literature of the subject a few years ago attributed to the "intelligent" organization only the attributes of the "learning" organization, while the "agile" organization was identified with the "intelligent" organization, etc. Currently in the scientific literature and popular science (both Polish and foreign), there is still no clear and unambiguous distinction between these models. An illustrative assessment of the determinants of the agile organization is contained in the Table 1.

Table 1. Characteristics of determinants of agile organization

Determinants of agile organization	Paradigms of an agile organization
Maintaining the high quality of the product through quality control	The quality of a product means its great usefulness, application value; it is a subjective matter and depends on the client's needs; the customer is not always able to accurately define needs? – especially at the beginning of the pattern implementation. The agile organization is basically based on the statement: "performance is excellent – and good!"; product quality is therefore an important but not the most important value; we care about product quality, instead of quality control, in accordance with the *lean management* concept; it is therefore necessary to constantly look after technical perfection in the production process.
Other features that determine the attractiveness of the product	The most important thing is to ensure an optimal balance of performance in terms of many attributes of the product, for example its compatibility with available market solutions and with price, delivery time, incremental delivery and added value for the customer; It is worth striving to distinguish the product from the competition – expanding its functionality and usability.
The cost of implementing the product as part of the entire company's operations	Striving to reduce costs and increase financial benefits according to *lean management* and *Kanban* concepts; operating on the market in line with the slogan: "faster, better, cheaper" and continuous efforts to reduce costs.
Time of product implementation (project implementation) and payback time	The progress of work and the passage of time in subsequent iterations are monitored on an ongoing basis; aims to simplify the activities and shorten the duration of the project – in the philosophy of Google: "just try"; the following rule applies: "It does not matter, for which task you post the working time, it is important – that the sum of working time should match"; the time of introducing a new product to the market is shortened (*Time-To-Market* concept); the increase in return on investment is obtained by extending the life cycle of the product; the risk of delays during the implementation of the product may result from unforeseen problems during the implementation of the project and its flexible nature.
Knowledge, experience and team skills as well as a positive atmosphere of cooperation	Skills: clear determination of the goal and its implementation, continuous learning and improvement, cooperation, respect for individuality (especially "omnibuses"), communication, constant maintenance of the pace of work, achieving business benefits (a positive attitude to innovation and entrepreneurship); significant: knowledge, experience, qualifications, motivation, resistance to stress, assertiveness, intralogistics, openness to changes, responsibility, independence and flexibility of self-organizing team members; numerous small sub-assemblies working simultaneously.
Good relations with business partners, awareness of their needs	It is necessary to cooperate with the customer, i.e. the Owner-Buyer of the Product: based on trust, understandable, direct, intense, with numerous interactions, formalized to a small extent (the necessary documentation is treated as part of the product); in cooperation with the client, there is an incremental approach, i.e. repeatability of activities, gradual development and increase of effects; in an agile organization, it is important to be aware of the benefits for the client treated as a prosumer; aims to increase customer satisfaction and, as a result, its loyalty.
Ability to predict risk and manage situations in the process of threat	There is a risk arising from formulating erroneous goals, which entails delays, costs and unreliability of the product; many problems are likely, such as low communication capacity, lack of sense of responsibility and joint ownership in the team and others; risk detection and prevention is possible thanks to: prioritization (according to the hierarchy: value, cost, knowledge, risk), application of incremental approach and retrospection (in order to modify bad practices); treating risk factors as opportunities, not threats in the micro- and macro-scale.
The organization's ability to create value (including profits) for different stakeholder classes	Increasing market share (gaining new markets) by engaging the human factor in improving internal processes, creating knowledge, and leaving the organization beyond its borders (strategic cooperation with entities in the environment – cooperents or competitors, and also in a virtual environment); in addition, the "agile" organization model allows creating values on the basis of shortening the time of process implementation.

Table 1 (Continued)

Determinants of agile organization	Paradigms of an agile organization
Organizational flexibility	Flexibility achieved, for example, through appropriate mobilization of resources, as well as cyclical verification and hierarchization of goals in the organization - achievable, among others, thanks to the constructive (including effective, efficient, methodically correct, etc.) application of specific methods, techniques and management tools appropriate for a given time and place; it may also be related to the creation of knowledge and management of this knowledge and the formation of internal and external relations by the organization in both the operational and strategic dimensions.
The organization's ability to provide and maintain business continuity in various states	The ability of the organization to ensure and maintain the continuity of operations (the environment and the organization itself) as a result of the attitude of employees (and the organization as a whole) to continuous learning, creating alternatives or systemic thinking and evaluation and validation of risk factors and uncertainty - which can be guaranteed even by proper knowledge management and shaping of action structures resistant to negative influence of specific factors and endogenous and exogenous determinants of the organization.

* Source: own elaboration based on [1], [4], [8], [10], [12], [13], [14], [16], [19], [23], [27]

The "agility" of the organization can be understood in various ways, through the prism of various criteria. "Agility", being the basic attribute of contemporary organizations, at the same time has a number of its own attributes. Thanks to this, the agile organization model can be the foundation for creating complete, comprehensive and consistent business models for the organization and stands out against the background of "learning" and "smart" organizations, supporting the organization's risk management subsystem based on two main resources, i. e. knowledge and people who, in combination, generate flexibility in operation, also in the sales process [27].

3. The relationship sales model and the professional customer service

In every contemporary organization, it is increasingly said that acquiring a new client is several times more expensive than maintaining the current client. This means more or less that building customer relationships is often much more important than selling alone. The peak of success is to change the relationship building in the sales process, which is why recently a lot of attention has been devoted to developing these skills. Behind the concept of relational sales is a long-lasting process often starting long before meeting a potential client. Relational sales are based on the sales skills of services or products, based on understanding all the emotional needs of customers. To get to know the most important needs, the seller is forced to establish a relationship with the customer. Most often, such a sale is useful in the segment of services, such as insurance or investments, where the customer cannot see a measurable product at a given moment but it must suffice for him/her to make a decision promise of future benefits [15].

At this point, the strictly referred to the golden sales triangle - this is a formula that was based on the experience of sellers with the best sales results. The results of many surveys around the world have been formulated for sellers in terms of building customer relationships. The most frequently given terms were: adviser, teacher and friend (especially when considering the aspect of relationship sales). In the case of determining the seller as an adviser, clients' statements indicate that the sellers should be clearly experts in a given field. They should be able to give valuable advice about not only the services or products they offer, but also many other issues often not related to sales. When the customer feels full confidence in the seller, he/she will treat him/her as an expert and advisor. As a result, he will not want to buy from anyone else, because one will know that the seller will recommend him/her the best possible services or products offered. Customers also see the teachers' sellers who will guide them and show them how they can best use the products or services they offer. Sellers try to educate customers to a much wider extent by providing knowledge to them so that the customer makes the best and informed decision. Therefore, they gain customer experience and treat the seller as a person indicating their knowledge and purchasing practice [26]. The last and most important statement coming from clients' lips is a friend. If the customer sees the seller as a friend, he/she is in the best possible position. Such a seller, seen through the eyes of the client, cares more about his/her good than he/she wants to carry out transactions. In fact, this customer remains loyal for a long time. Often, even these friendships go beyond business and remain for long years [22].

Relational sales are not always done through direct contact with the customer. Often, this process should start with building relationships indirectly through branding. Contact with the client is the fulfilment of his/her emotional

need. Relationships can be more important in different types of sales. As the size and complexity of transactions increases, the essence of the relationship in this process increases. Typically, in complicated relationships there are many details and details that the customer is unable to analyze, which is why, based on the trust one gives the seller, he/she is able to make a purchase decision. The client is very sensitive to the reactions of other people, so if the customer decides to buy services or products that will be implemented by other people, he/she must trust the seller. At every moment of the purchase, he/she approaches many activities very emotionally [25]. When the client is forced to use a given purchase for a long time, trust in the seller increases his/her weight and becomes the most important factor during transactions. The most important relationships have when the purchase is made for the first time. If the seller is trusted, there is a high probability of long cooperation and many subsequent transactions, and as a result of building loyalty [18] (Fig. 1).

Currently, an important element in the sale process is the risk borne by both the customer and the seller. The level of risk can be easily reduced through good relations. To reduce the likelihood of risk associated with the purchase people are able to pay colossal amounts. If a person has a choice to cheaper product, however, associated with a high risk and more expensive product, but one that gives a sense of security, will always choose the more expensive. You should answer all of these unspoken questions from the customer and act confidently enough to make sure that he is safe and that the transaction with the seller does not involve any risk. Every suggestion and presentation of a competitor's product in the face of risk brings the seller closer to success and increases the value of the product offered by him/her [11].

Communication has an important impact on sales, especially relational, because the seller needs to know how to develop the coding process, so that the buyer can understand the message, that is, decode it. It is important to use different media that best represent the information and knowledge of the person building the relationship. Plain text should be varied with drawings, samples, models and other similar incentives to make the presentation better understood. In addition to the message encoded by the buyer, there must be feedback for the seller whether the communication actually takes place and has been received correctly. If there is a flow of so-called feedback in communication (understanding between the seller and the customer), then it is known that the communication is mutual and brings the desired effect. Relational sales are very important when building credibility and trust, and this is often done during professional customer service and initial sales closure (Figure 1).

What is more, building relationships with clients in a narrow perspective is the creating bonds with individual and institutional clients as purchasers of products and services that rely on effective communication, partnership, service quality and correlation between customer orientation and the value of the enterprise [7].

During the conversation with the customer, the seller must often overcome many obstacles called barriers to communication that also inhibit the process of building relationships in the sales process. It turns out that the sellers often lose their chances of successfully completing the transaction, because they are not able to overcome these barriers. Below are presented the main reasons that make the sale is not successful, as well as does not end up building a bond:

- failure to observe the need to purchase the offered product – it appears when the seller misrepresents the product, does not know the customer's needs or cannot make the customer think that he/she has the need to buy the product;
- lack of knowledge of the product and the sales offer;
- differences in perception – communication ceases to exist when the seller and the buyer understand the information that is conveyed in the presentation in a different way;
- information overload – the more information the less the buyer can remember them;
- strong desire to increase sales – excessive pressure on sales from the side offering the product or service can create communication barriers;
- chaotic presentation – if there is no order during the presentation, the buyer feels frustrated; if the seller is not able to return to the next presentation when asking questions, the communication may be broken;
- distracting factors – answering the telephone, chaos, distracting sounds make the buyer's thoughts run completely differently from the intended one;
- careless listening – usually takes place when the seller does not allow the buyer to speak;

- communication differences between the buyer and the seller – the vendor's failure to adapt to the style of the customer without recognizing it or being inflexible;
- the lack of positive attitude and personal culture on the part of the seller often discourages customers from buying again and establishing relationships [9];
- the risk of an unexpected relationship termination due to a higher level of costs imposed on the client [6].

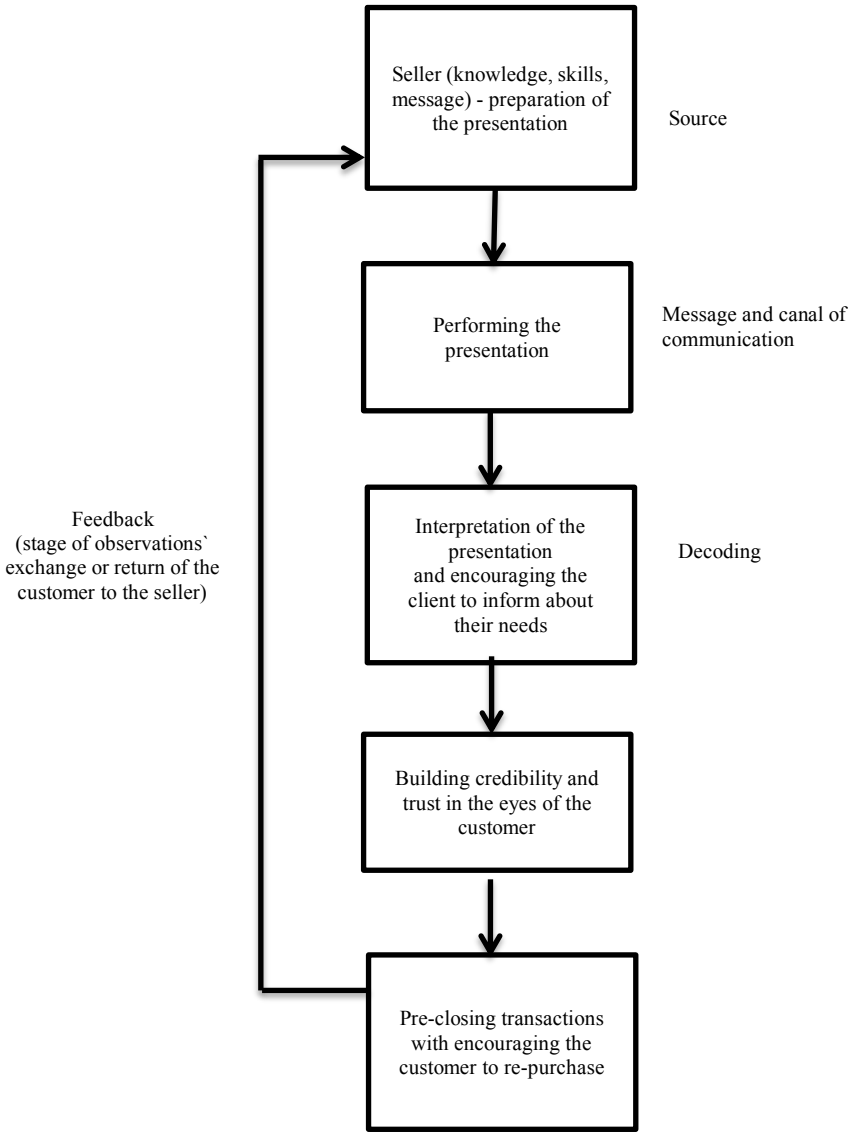
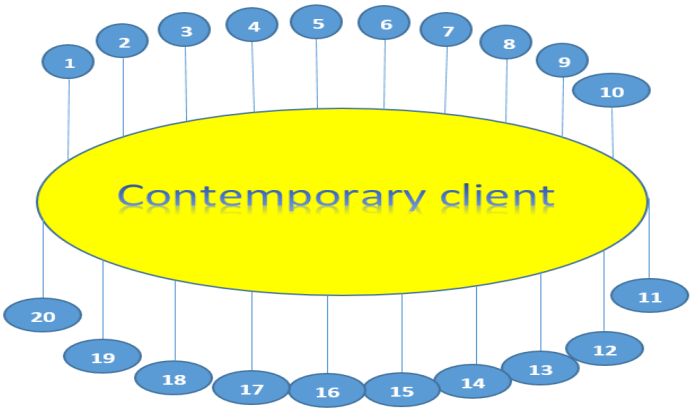


Fig. 1. Relationship sales – stages of building customer relationships during the communication process. Source: own study based on [9]

In world literature, one can notice certain regularity in contemporary organizations, that is, determining the most important resources of companies. In modern knowledge-based economies, the most important resources of enterprises include marketing resources (marketable assets and marketing assets). Defining these resources in more detail can include: customers (customer base, customer relationships, and customer portfolio), brand (brand capital), customer knowledge (marketing information system, marketing relationship capital, marketing knowledge), distribution channels (relations with distributors, intermediaries) and relations with suppliers [21].

Today's customers have high demands, often reach for various new products available on the market; they count their costs and expect a high value from the seller, because it is hard for them to become attached to one seller. A contemporary consumer is a physically and electronically active person who has a lot of knowledge and a lot of shopping experience, which is why he/she expects professional customer service, high quality products and at the same time paying a low price (high purchase requirements). The features of the contemporary client are shown in Figure 2.



Explanations:
1. He/she wants to be treated with respect and individually.
2. He/she is claiming and knows his purchase possibilities (he is a global client).
3. He/she is demanding and at the same time grumpy.
4. He/she rarely buys the same product/service because he/she compares the prices of the competition.
5. Looking for discounts and sales opportunities.
6. Replaces suppliers and brands of products quite quickly, if it finds more favourable prices.
7. Draws attention to the quality of products/services.
8. Has a lot of knowledge about products/services.
9. He/she expects from the seller a high personal culture and respect.
10. Has access to wide information and often maintains the position of a person "stupidly wise".
11. Most customers are undecided, but want to have a large selection of purchase.
12. Looks for individual benefits with every purchase.
13. Expects solid and honest advice and opinions about the product service.
14. He/she does not buy rashly and compares products.
15. Has a lot of sales experience and analyzes everything before buying.
16. Has limited confidence in traders.
17. He/she is impatient during the purchase.
18. He/she often gets aggressive quickly.
19. Prefers electronic than stationary shopping.
20. He/she is not loyal to products/services and brands of companies.

Fig. 2. A network of related features defining a contemporary client. Source: own research

With regard to modern customer requirements, it should be noted that the seller cannot be a man who only has knowledge and knows specific sales techniques, but a professional – relationship sales psychologist. In order for the customer to feel understood and appreciated, he/she must feel that the seller understands the needs and the emotions that lie in him/her. The task is not simple, the more that it consists in distinguishing empathy that is, recognizing and confirming the emotional state of the other person from compassion, or identifying with the emotions of another person. Empathy, understanding and trust are important in relationship sales. Providing empathy means that the client feels exceptionally treated, understanding reveals the seller's true knowledge, and trust builds a long-term relationship and even customer loyalty [26].

In reference to business practice, own research and literature, a relational sales model was created, based on four

pillars, which are very important in everyday customer service. These pillars must be presented to all employees, and not only to people who have direct contact with the client (Fig. 3). The relational sales model is based on four levels of the reverse pyramid, where confidence and reliability are the highest level (40%), because trust is a bond that combines relationships, and empathy that adds confidence in sales contacts should often appear at this stage [21]. As part of shaping the organizational culture, the first pillar can be defined by the level of culture of building trust in the relations of the seller-customer, and more broadly the company-client (creating the reputation and the brand of the company). In every relationship the most important people in interpersonal contact are the people we trust, the more it can be seen in commercial relations. Relations built on the basis of trust are created with varying intensity. Therefore, staff empathy and credibility towards the staff takes place in those marketing contexts in which clients have the greatest chance to experience the positive empathy. The most intense contact of staff and empathy can be seen in the services market. D. Siemieniako described the degree of intensity as:

- frequency of client's meetings with staff;
- average duration of meetings;
- the severity of the solved problem for the client;
- the degree of customer involvement in the co-design and co-implementation of the product/service [17].

The second level of the relational sales model, including 30% of the pyramid, is the proper identification of needs. The bigger the seller shows interest in the client's needs, the more he/she will trust and trust not only the staff, but also the professionalism and quality of the company. Sturdy asking questions, active listening opens the customer for discussion and gives the seller the opportunity to get as much information as possible, which gives the opportunity to solidly recommend a product or service from the seller. This recommendation is nothing more than a solid presentation of the product or service and matching the features, benefits and advantages of the product to what the customer has just announced. This level occupies 20% of the entire process and can be defined as the product / service presentation culture of the company. The last pillar of the relational sales model is the very important level from the point of view of the company's objective, but not always ending the purchase transaction, i.e. confirming or closing the sale (it covers 10% of the pyramid), otherwise the level of the culture of achieving the sales target.

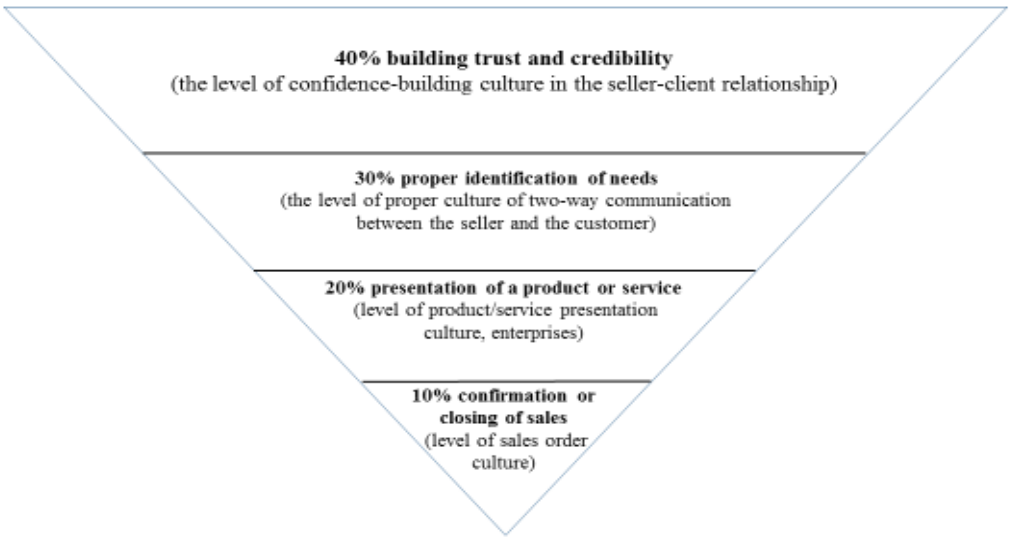


Fig. 3. The relationship sales model in a contemporary enterprise based on building a customer relationship. Source: own research based on [21]

4. Elements of sales success and errors in the customer service – a case study based on the own research

For the purpose of the research, the authors conducted interviews addressed to sales managers (top and middle level) of medium and large enterprises from the Mazowieckie and Podlaskie Voivodship in Poland. First beginning research was carried out between January and February 2017 and extended one was done from February to October 2017. To determine the role and the importance of relationship sales and main characteristics of professional customer service as well success factors in the sales process in the study conducted, the following questions were diagnosed:

- how to build the relationship sales in the contemporary enterprise?
- whether the respondents are able to identify professional customer service and success factors in the sales process?
- are managers aware of mistakes made by salespeople in the process of customer service?

As a result of conducted research, 60 interviews were used to analyse and draw conclusions. Table 2 shows the details of research made in the process of the study.

Table 2. Description of the research

Area	Description
Scope of the presented study	Identification of professional customer service and success factors in the sales process; description of the contemporary client; mistakes committed in the customer service process
Research tool	Direct interview
Period of the research	10 months (from 10.01.2017 to 31.10.2017)
Study population	Managers from the Polish enterprises of the highest and middle level from the Mazowieckie and Podlaskie Voivodship who make decisions in marketing and sales
Criteria for selecting a trial sample	Availability of respondents
Sample size	60 top and middle-level managers of production and service companies
Types of enterprises managed by the surveyed managers	By criteria such as: type of business (large – 25 managers, middle enterprises – 35 managers). All researched managers were sales and customer service managers or CEOs
Methods of conducting research	Sixty interviews were conducted during fairs, scientific conferences and directly at the managers' workplaces. Respondents personally answered questions, meaning that the survey was appropriate
Results of the study	Managers answered questions honestly, giving their own suggestions and examples from their own experience

From the first part of the research there was created a list of characteristics of the professional customer service in the contemporary enterprises (the list is presented below). Some interviewees noted that they knew the customer service code, but in the context of the interviews, they were fluent in their work because they did not appear in the written format. Most of them pointed out that these characteristics are demanded in the model of relationship sales according to customers` needs. In addition, when defining professionalism in customer service, the following elements were enlisted:

General skills, including soft skills:

- impeccable external image - neat appearance building trust;
- ability to build relationships and very good communicativeness;
- customer focus and listening;
- ability to deal with stress and conflict in the workplace;
- negotiating skills with each client (non-conflict, passive, aggressive, etc.);
- ability to manage their own time and punctuality;
- ability to actively listen to employees and customers;
- respond to customer feedback and promptly handle complaints;
- build trust in the team in which you work;
- auto-determination and discipline in sales;
- friendly and cultured approach to the client;
- honesty and respect towards the customer as a human being, not a profit-making person;

- impatience in pursuit of the goal;
- sense of humour and attitude towards the client and not for his own benefit.

Additional skills:

- knowledge of the company and its marketing information;
- knowledge of the product offer on a regular basis;
- ability to gain knowledge of competition;
- obtaining information from the market and changing customer needs;
- knowledge of foreign languages;
- availability for participation in fairs, exhibitions;
- fast learning ability and willingness to improve their qualifications [24].

To sell effectively, the trader must be knowledgeable. This knowledge must apply not only to the product or service it sells, but also to the customer and the latest technologies. Having such knowledge is crucial because it is the building block of the relationship between the buyer and the seller. The salesman, to a large extent thanks to this, begins to believe in own abilities, because by training general skills he/she becomes a professional in what he/she does. Usually, the first few minutes verify seller knowledge. As a result, the buyer begins to inspire confidence in the merchant, and this can be the source of a successful transaction. Therefore, you can risk saying that the more knowledge of the seller, the positive psychological attitude and the professional presentation of the product / service, the more sales. A very important element of sales is knowledge about the customer and recognition of the needs; it is extremely important because thanks to this the seller can tailor the products and services to the needs, making the client aware that a given service or product is really necessary for him/her [3]. This often involves asking a lot of questions, and thus the process of admission for sale sometimes takes a very long time and some ambiguities arise, but the seller must serve the customer and be prepared for each purchase transaction. An important element of the trader's knowledge is also the knowledge of the history of the company he represents and currently prevailing rules and rules of conduct. What is more, the company's knowledge facilitates the transfer of the image presented to the buyer as an expert to a large extent. The company's history is needed so that the salesperson, if asked by the potential customer, could demonstrate the knowledge and information from the past give the seller information on how the company achieved current results. The scope of information that a seller should have depends on the industry in which it operates. An example of this can be technologically advanced products that require extensive knowledge as they end up in a group of well-informed consumers. All information regarding the rules of conduct, production, procedures or development of the company are often discussed during the presentation, therefore, if they do not want to, they must be assimilated by the seller. Table 3 presents the most important factors in achieving the success of the seller of services / products on the market along with the averaged weights assigned by respondents.

Table 3. Significant factors in achieving the success of the seller of services/products on the market and comparing their weights according to own research

		Weight
1.	Positive mental attitude	5
2.	Sympathy (nice appearance)	4
3.	Full knowledge of the product / service	5
4.	Searching and acquiring new clients	3
5.	Professional presentation of own person, company, brand and product / service	5
6.	Ability to quickly respond to remarks and complaints	5
7.	The ability to organize time in the sales process and at work	5
8.	Frequent improvement of sales skills through participation in trainings, fairs, exhibitions, etc.	3
9.	Willingness to work hard and over fixed hours (availability)	4
10.	A strong need for achievements	2
11.	Relevant character	5
12.	The ability to ask questions and hear answers	5
13.	Readiness to serve the client and cooperation with each client	5
14.	Physical and mental preparation for every sales transaction	3
15.	Quick resolution of sales problems	5
16.	Conscientiousness and integrity at work	5
17.	Building trust and customer loyalty during each sales transaction	5
18.	Customer-friendly attitude and high personal culture	5

Table 3 (Continued)

		Weight
19	Empathy for various types of clients	5
20.	Auto-determination and discipline in sales	3
21.	Ability to deal with stress and conflicts in the workplace	4
22.	Negotiating skills with each client (conflict-free, passive, aggressive, etc.)	5
23.	Patience in pursuing a goal	5
24.	Ability to manage own time and punctuality	2
25.	A blameless external image – a neat appearance that inspires confidence	5
26.	Building trust in the team at work	3
27.	Honesty and respect towards the client as a man, not a person who brings profit to the company	5
28.	Ability to learn about competition	3
29.	Quick learning ability and willingness to improve qualifications	5
30.	Knowledge of foreign languages	3

Explanation. The weights were assigned to particular factors on the basis of a five-point scale:

- 5 points: absolutely necessary factor (dominant);
- 4 points: necessary factor (very good);
- 3 points: useful (essential) factor;
- 2 points: sufficient factor (acceptable);
- 1 points: mediocre factor (minimum).

Due to the creation of professionalism and sales success, it should also be noted that in spite of much training and own experiences or complaints from customers, they make mistakes, which according to the respondents concern three categories: organizational, interpersonal and economic. What is more, due to organizational errors there were mainly pointed out such ones as: conducting business conversations with the wrong customer; promising beyond the possibilities – e. g. offering deadlines for the execution of the order not in line with the actual time required to prepare the product (no contact with the production department in cases of very unusual orders); dealing with customers who have never had any orders or orders were only symbolic (e. g. too difficult to do for the current supplier); failure to meet the contract time from acceptance of the order to deliver the goods to the customer; hastening the customer to make a purchase decision; lack of knowledge of the offer; and others. Taking into account interpersonal errors managers stated that improper communication between the seller and the customer, arrogance and lack of diplomacy in the communication process; lack of sensitivity and little patience in the sales process; too much "ego" of the seller and exuberant self-confidence, lies in sales promises are the worst mistakes. Economic errors according to the surveyed managers, for example, are: focus on a quick one-off result rather than building loyalty, inadequate prices for product/service quality, focus on the performance of sales tasks and own commission, the sale of low-cost products (so-called "massive products") to which customers have claims and frequent complaints; accepting individual orders for products that require a significant amount of time and labour at a relatively low price level for the product [24].

Conclusions and discussions

Sellers who achieve the best results can identify the so-called strategic customer problem. The strategic word means that the seller has to deal with problems that are important to their potential buyer. Strategic problem solving consists of three important elements, such as discovering needs, developing solutions that will be beneficial on both sides, reaching an agreement with the client, and especially gaining the trust and credibility. If all these elements are preserved, a strategic customer relationship is established based on trust and increasing the intensity of sales contacts. The most common goals of the consumer are the reduction of costs and a significant increase in the existing productivity and satisfaction with shopping. The basis for the seller's success is planning the conversation with the client. Not only customers are satisfied with the fact that the seller is prepared for the meeting and the presentation itself runs smoothly. The sellers themselves also say that scheduling a conversation early is associated

with many advantages. Among other things, planning increases the sense of security of the seller and promotes self-confidence, affects the creation of a positive atmosphere and, most importantly, contributes to better sales results, which is why traders must be flexible, as well as the entire organization should adapt agile changes in the rapidly changing market.

Taking into account all the elements related to relational sales, it should be noted that effective sales in the realities of today's competition are very difficult. Sales that achieve the desired results are based on two strongly interacting factors, i.e. the quality of the product offered by the seller and the skills that the seller uses. At the same time, customers are no longer satisfied with the usual offer of products, because they are looking for new products and quality in customer service. Modern offers must be as attractive as possible to the client, which is very difficult to achieve if the companies are not agile with the current competition. It is therefore worth investing in innovative sales methods, professional customer service, minimizing sales errors and expanding and strengthening sales based on relationships with the existing and potential customers. The presented relational sales model is based strictly on consultancy and partnership, and it also turns out that it is effective in the commercial reality according to the experience of the managers surveyed. The relationship sales model can be placed in the sustainability aspect of functioning of the contemporary organization based on trust, credibility and social relations with stakeholders, mainly with customers. What is more, agile organizations according to the theory and practise precisely focus on such elements as knowledge, experience and team skills as well as a positive atmosphere of cooperation, good relations with business partners, awareness of their needs, ability to predict risk and manage situations in the process of threat, the organization's ability to create value for different stakeholder classes – those are basic elements of contemporary relationship sales model.

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The Importance of Organizational Culture for Sustainable Development

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Abstract

Purpose – The purpose of this paper is to describe the importance of organizational culture for sustainable development.
Design/methodology/approach – The research is both exploratory and qualitative in nature and uses systematic analysis and generalization of scientific literature.
Findings and contribution – The contribution made by this research was reflecting upon the need to add sustainability aspect to organizational culture and how changes of organizational culture for the implementation of sustainable development create a favorable context for changes in employee values and motivation to participate in enterprise development, environmental protection and social development
Originality/value – Insofar as organizational culture was not widely discussed from sustainability aspect, our findings extend the understanding and reveal wider approach to sustainable development, observations here provide some insights into possible approaches and further guidelines for research.

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Keywords: sustainable development, organizational culture, elements of organizational culture, competitive advantage.

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1. Introduction

With the development of business, commerce and the increasing pressure of globalization tendencies, the following aspects become evident – the interdependence and the reflection of business activities on the environment and social aspects of ecosystems, including human populations. The recognized value of sustainable development in the world changes the principles of the work in organizations in order to achieve long-term development progress [1]. After taking into account the positive aspects of sustainable development principles and practices, it becomes clear that the concept of sustainable development is a tool that embraces a whole range of methods to ensure sustainable development that satisfies people's well-being. Each organization must recognize that it is an open system related to the environment [2, 3].

Sustainable development is a difficult subject to pin down since it encompasses so many different things. Due to the complexity of this subject, it's important to look at the importance of sustainable development in a holistic way that approaches the issue rationally. Sustainable development doesn't always refer to environmental sustainability or other green topics [4]. Sustainable development also needs to take economic and social sustainability into account in order to fit within the parameters of sustainable development. *The purpose* of this paper is to reveal the importance of organizational culture for sustainable development. There is no doubt that the idea of sustainable development approach and its relevance has become the agenda for scientists in their research where this concept is widely analyzed in various aspects [5, 32]. However, there is a problem with the adoption of new ideas in ecosystems, when some organizations do not accept the sustainability idea and ecosystem members are not only uninterested in innovative solutions, the implementation of ideas and principles for sustainable development, but sometimes even oppose their implementation. Therefore, it is necessary to formulate and develop a supportive environment - the organizational culture. Developing a culture of sustainable development through organizational culture is a topical and timely topic in both national and international contexts. The scientific and practical relevance of the topic is based on the desire to identify the features of the organization culture acting as an ecosystem uniting force and to develop guidelines for the formation of a culture that is conducive to sustainable development.

Object of the research: organizational culture and sustainable development. In order to theoretically substantiate the links between the organization's cultural and sustainable development, the research tasks are formulated that include the analysis of scientific literature for theoretical reasoning of the concept of the organization of culture and sustainable development, the expression of the cultural elements of the organization in the context of sustainable development and organizational culture as a competitive advantage in the context of sustainable development. *Research methods*: the study was developed using systematic analysis and generalization of scientific literature.

2. The concepts of organizational culture and sustainable development

The term organizational culture was first introduced in 1970–1980. The researchers proposed various definitions, starting with the concepts, common values, ideologies and beliefs [6], from the accepted rules of behavior, rules and rituals [7] to the given meanings or understanding patterns [8].

Culture exists wherever people gather, communicate, share their opinions, values, develop their traditions. According to Gubicaitė-Šilingienė [9], the collective is not a simple whole of individuals, and people are not the same as their place of work. It's important for people to be proud of their organization and to be part of it.

Emphasized values, goals, and phenomena make it possible to better understand each other by organizing mutual interactions. The value system in the organization stimulates teamwork and ensures transfer of knowledge. Organizational culture with unified values, norms, attitudes, and traditions helps individuals to identify with the organization and to transform different groups of individuals into a harmonious group, creating the preconditions for a synergistic effect.

From a systematic point of view, an organization is the totality of technologies that interact with the changing environment, such as people, structures. In each organization, there are certain standards of conduct, standards, rules, provisions, values. Organizations integrate and adapt the relationship between the individual and the public. Organizational culture through declaring values, symbols, and myths reflects the organization's attitudes as it takes to work, so that the organization achieves its goals and satisfies the needs of all members of the organization without harming others and the environment.

General organizational culture can be defined as a whole set of rules, norms, values and convictions that is deliberately created by the management and guided by the organization in order to achieve its goals and solve emerging problems [10].

The changing environment also affects society's requirements for organizations. Society expects socially responsible and ethical behavior from organizations. In addition to the organization's economic and organizational tasks, social issues also become topical in the organization. The correspondence of organization image to the reality and its challenges is becoming a challenge for organizations, which cannot be implemented without the formation of organizational culture.

The World Commission on Environment and Development, commonly referred to as the Brundtland Commission, defined the concept as development "that meets the needs of the present without compromising the ability of future generations to meet their own needs", and at the same time takes into account the needs of the poor in the developing world.

Many sources refer to three main dimensions of sustainable development: economic, ecological and social.

Economic sustainability includes sufficient and stable conditions for economic growth, such as preserving financial stability, low and steady inflation rates, ability to invest and innovation [11]. The economic dimension of sustainable development describes the development that creates conditions for long-term stable economic growth. The principles of ecological sustainable development focus on the stability of biological and physical systems. The primary task of economic development is to find out the boundaries of natural systems for various economic activities [12]. The main principle of social (ethical) sustainability is the satisfaction of the basic needs of enterprises. One of the most important criteria here is the assurance of human rights [13]. The social dimension of sustainability requires the satisfaction of the basic needs of a person, the development of a fully quality life [14]. Sustainable development is characterized by a constant change, which is determined not only by people's individual abilities, but also by the regulation of social and economic development rate ensured at national and organizational levels.

Sustainable development is intensively discussed in politics and macroeconomics, but rarely on the level of business processes.

3. The expression of organizational culture elements in the context of sustainable development

Sustainable development is intensively discussed in politics and macroeconomics, but rarely on the level of business processes. Since Sustainable Development is focused on the rudimental aims of a business company such as economical, ecological aspects and innovation, it is important for both future legislative conformity and strategic market position. To achieve these aims, three basic organizational variables are available: Organizational structure, formal management instruments and organizational culture.

Dilworth, Stokes, Weinberger and Spartari [33] emphasize that it is particularly important to understand what sustainability means in a particular organization and at a specific time, to the extent that it can be used for the purposes of the organization and insofar as it concerns the conservation of natural resources. According to Isaksson and Hallencreutz [17], only long-term solutions in organizations can influence sustainability.

A key factor in the implementation of sustainable development principles in organizations is primarily the emphasis on external factors such as environmental regulation and government-imposed standards or pressure from customer groups and the community. However, the organization itself was essentially treated as a "black box" [14, 15]. There is a lack of clarity on how best to implement enterprise sustainability in organizational practice [16].

Several studies have shown that there is internal organizational pressure to adopt sustainability practices such as employee turnover due to decreased firm loyalty and job satisfaction. These studies point to internal organizational factors such as senior management support, human resources management, environmental education, employee empowerment, teamwork and reward system as important aspects for business sustainability [16–17]. Other authors argue that even greater changes in employee values and key assumptions are needed in order for organizations to truly achieve sustainability [18]. Therefore, enterprise sustainability is a multi-faceted concept that requires different organizational changes and adaptations [19].

The adoption of business sustainability principles is evident in technical solutions published in company sustainability reports, in the integration of sustainability measures into employee performance assessment or employee training. It is a context in which sustainable practice is adopted. At the value level, the adoption of enterprise sustainability principles takes place by changing employee values and beliefs into more ethical and responsible values [18].

Scientists have tried to create systems for the distribution of important organizational cultural dimensions and the conceptual exploration of organizational culture. Different levels of enterprise sustainability have parallels with different organizational culture dimensions [10]: visible culture (visible organizational structure, processes and behavior), supportive values (strategies, goals and philosophies), and key assumptions (attitudes, beliefs and perceptions that make up the main source of values and actions).

Many scientists prevailing organizational values take as the basis of culture. Some of them perceive organizational culture more broadly by stating that it includes not only the system of values, but also the ways in which it manifests itself. According to Howard, values, ideologies, and beliefs are considered crucial elements for understanding the organization's culture and are considered credible in its representational elements. Each organization pursues its own specific attitudes and values in pursuit of its goals and in solving its problems.

Organizational culture is a powerful force that guides and shapes the behavior of individuals in an organization. Culture can be deeply rooted in the organization, and can exist independently of management. Organizational culture emphasizing important values can help achieve the goals set by the team, create conditions for interaction between the employees, and promote the development of the organization itself [20]. The foundation of organizational culture is the values that serve the development of relevant norms and behavioral patterns in the organization. Values recognized and acclaimed by leaders are the basis upon which the team's concentration is based, and common approaches and actions are formed that favors the achievement of the organization's goals. Many scholars portray organizational leaders as cultural creators or transformers who are able to imagine and establish a strong culture with fidelity and commitment, thereby enhancing productivity and operational excellence. Employees belonging to different organizational cultures have different orientations towards sustainable development of the company and are different in their perception.

There are scholars who say that economic sustainability alone (i.e., maximization of profits, production and consumption) is not enough for the sustainable development of organizations. Empirical evidence has shown that connecting with the natural environment can improve the company's performance [21].

Organizations that are narrowly focused solely on achieving economic performance may miss sustainable innovation and business opportunities focusing on sustainability [22]. In organizations with a hierarchy and an orientation towards internal process values, in order to establish sustainability commitments of companies, there can be a great deal of tension between an already existing culture based on stability and control and the need for curiosity, research and flexibility [22].

According to Linnenluecke and Griffths [19], in organizations with a predominantly human-oriented culture, more attention is paid to internal development of employees, learning and capacity building in order to achieve sustainable development. It shows that an organization with a strong orientation towards human relationships assumes the responsibility to contribute to the process of updating and improving the knowledge and skills of people, and strongly encourages the principles of equal opportunities, job diversity and work-life balance as work.

Organizations with a predominantly orientation towards the outside environment through rational culture of purpose are focusing on resource efficiency in order to achieve sustainable development. Resource efficiency means that there is a real advantage in actively implementing sustainability practices, especially if this practice is geared towards cost reduction and efficiency improvement [19].

Organizations with an orientation towards innovation tend to focus more on organic and social innovation for the sake of sustainable development. Organizations need to shift from pollution control or prevention to the use of natural resources and the reduction of the ecological footprint [31]. Understanding the company's sustainable development as a social coherence is due to trends such as globalization and privatization, and organizations need to engage more broadly with stakeholders and communities in which they operate [23].

Strong organizational cultures are associated with high performance only when they are in line with the organizational strategy and can adapt to changing environmental conditions [24].

4. Organizational culture as a tool for competitive advantage

Management practices and theories in the US and in Western Europe were among the first to focus on organizational culture as an intangible success factor for economic prosperity. In the United States and in Western Europe, such a strong interest in organizing culture has been deliberately induced in order to create an ideology for raising the efficiency of organizations and collectively pursuing ethical values (in addition to the objective changes in the market, international and domestic competition, access to information, threats to crises, etc.) [10]. The responsibility of the organization now is not only for shareholders but also for consumers, employees, business partners, communities, nature in itself. If a company wants its business to flourish, it must adhere to the adoption and implementation of new standards.

The most important aspect of sustainable development is the perception of the "individual group" towards a "common group" change [25].

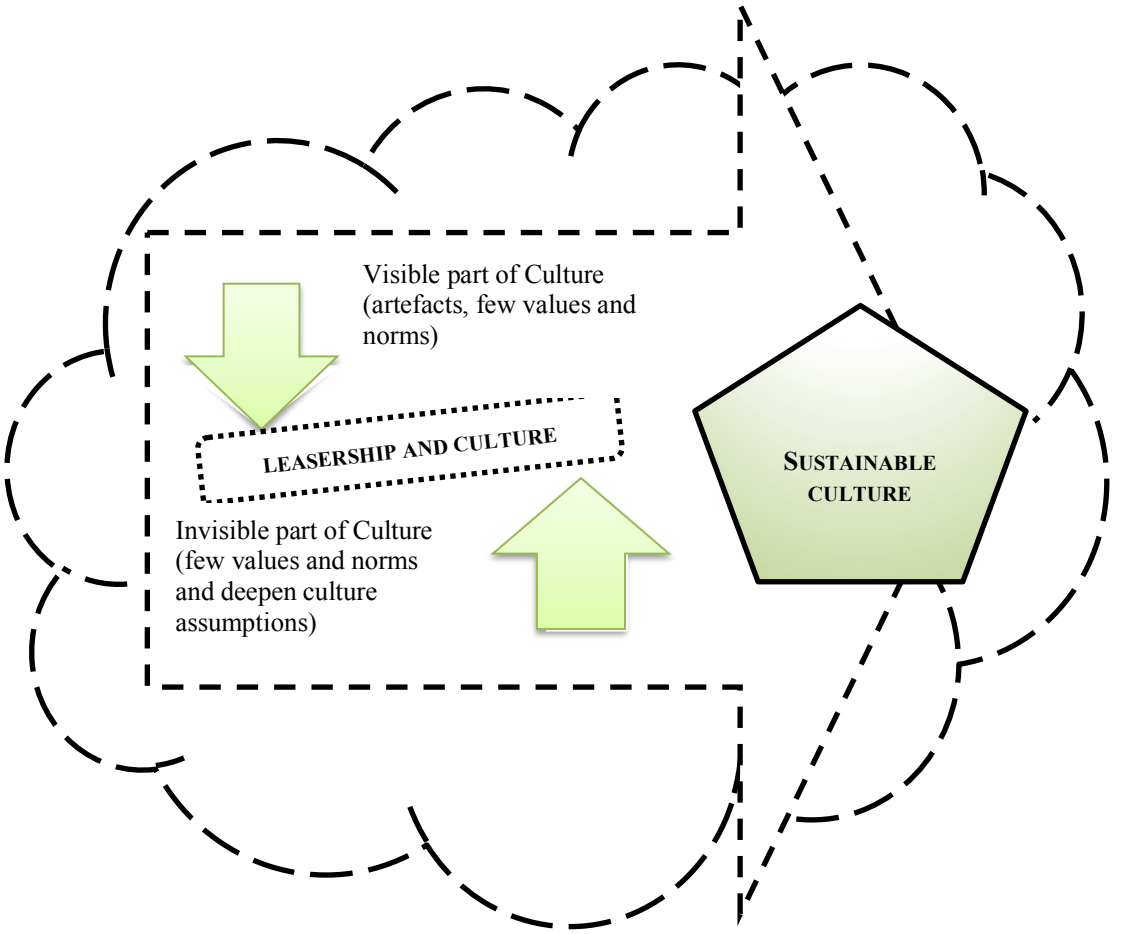

Fig. 1. Developing a sustainable culture (Adapted from [34])

Organizational culture manifests itself in the behavior, beliefs and assumptions, values and attitudes of its members and is a valuable source of competitive advantage for the company [26], because it forms organizational procedures, links the organization's employees' capacities to a coherent whole, proposes solutions to the problems

encountered by organizations thus helping the organization achieve its goals. A sustainable competitive advantage is to channel effective intelligence in the right direction.

Sustainable business environments are not only economic, but also related to environmental resources, social prosperity and stability. Environment and business are closely interlinked, and the long-term success of a business depends on how an organization is able to integrate harmoniously into the environment and feel the social moods of the society [27–28]. Social relations are shaped to enhance innovation and competitiveness, and to shape the organization's identity. Essentially, the main task of organizational executives is to create a strong organizational culture oriented towards sustainable development, which enriches and unites the members of the company, promotes the sense of identity and commitment to pursuing economic, environmental and social goals. When an employee not only understands the ideals of the organization, strictly adheres to the organization's rules and norms, but also fully understands organizational values, then the values of the cultural organization become individual values of the employee, taking a firm stand in the structure of his motivation [29–30]. Organizational success in the long run depends on its ability to integrate into the environment and to feel, and to assess the social moods of stakeholders. Sustainability can be treated as a leadership challenge which requires constant questioning of its meaning by the diverse stakeholders (Fig. 1).

Sustainability enables to re-put the focus on leadership and on stakeholders that are central to the development of both levels of the organizational culture.

Conclusions

Corporate sustainability consists of a search for well-balanced, functional solutions creating value in the economic, social and ecological realms of corporate performance, in a synergistic, win-together approach with all relevant stakeholders. While business traditionally seeks precision and practicality as the basis for its planning efforts, sustainable development is a concept that is not amenable to simple and universal definition. It is fluid, and changes over time in response to increased information and society's evolving priorities. The role of business in contributing to sustainable development remains indefinite. While all business enterprises can make a contribution towards its attainment, the ability to make a difference varies by sector and organization size. The right to be and the capacity to create added value equals the duty to be responsible for its impact and to adjust itself to changes in its environment. Without conforming to this principle, organizations ultimately risk extinction.

The purpose of this paper was to describe to describe the importance of organizational culture for sustainable development. Organizations of different cultural types focus on various business aspirations for sustainable development-economic, environmental, social development.

The contribution made by this research was reflection upon the need to add sustainability aspect to organizational culture and how changes of organizational culture in the implementation of sustainable development create a favorable context for changes in employee values and motivation to participate in enterprise development, environmental protection and social development. Therefore, the proposed analysis present some interesting insights for further research on the organizational culture from sustainability approach. The perception of organizational values provides insights for initiating the development of programs for change aimed at the sustainable development of enterprises. It is necessary to look for suitable indicators that help to develop a sustainable organization. It is important for the organization's employees to understand the essence and benefits of a sustainable organization to adhere to the principles of sustainable development.

Corporate sustainability should be fully integrated and embedded in every aspect of the organization giving importance to its culture and aiming at contributing to the quality and continuation of life of every being and entity, now and in the future. It is suggested that the link between organizational culture and enterprise sustainable development needs to be further explored by assessing how the diffusion of prevalent values in organizations affects changes towards sustainable development.

This paper is largely based on reasoning starting from basic principles of sustainable development. Sustainability is not doing things a little bit better, but about seeing that systems we work with can be sustained perpetually. Organizations could be seen as systems that are part of the global system. For the global system to be sustainable the parts of it, at least as a collective, must be sustainable.

Change towards sustainability is needed in all branches. One of the areas where change would really be needed organizational culture. The right to be and the capacity to create added value equals the duty to be responsible for its impact and to adjust itself to changes in its environment. Without conforming to this principle, organizations ultimately risk extinction.

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Author Index